

**DRAFT**

**BIOLOGICAL RESOURCES AND MITIGATION  
OPPORTUNITIES AND CONSTRAINTS FOR  
CITY OF TUCSON PROPERTIES IN THE AVRA  
VALLEY**

Submitted to

**CITY OF TUCSON  
Comprehensive Planning Task Force**

Submitted by

**SWCA® Environmental Consultants**

**SEPTEMBER 2003**



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**CITY OF TUCSON  
Comprehensive Planning Task Force  
Post Office Box 27210  
Tucson, AZ 85726-7210  
(520) 791-4505**

Submitted by

**SWCA Environmental Consultants  
343 South Scott Avenue  
Tucson, Arizona 85701  
(520) 325-9194**

**September 9, 2003**





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## EXECUTIVE SUMMARY

The City of Tucson owns almost 24,000 acres of land in the Avra Valley, unincorporated Pima County, Arizona. This report summarizes observations and available information on the Avra Valley lands with regard to animal and plant species that are considered special interest species. It was prepared at the request of the City of Tucson to support decisions that might be made in planning for the management of these Avra Valley properties. To this end, the report includes the following: (1) a biological evaluation of the potential for species listed as threatened or endangered under the federal Endangered Species Act and other special interest species to occur on City-owned properties in the Avra Valley; (2) a review of potential opportunities and constraints for mitigation and habitat enhancement for the species that potentially may occur on these properties; and (3) a foundation for the future preparation of a Habitat Conservation Plan (HCP) for these species.

The Avra Valley lands considered in this report encompass 26 parcels, totaling approximately 23,920 acres. Elevations of the Avra Valley lands range from approximately 2,650 ft at the southernmost parcel, to 1,890 ft at the northernmost parcel. There are few bedrock outcrops in the Avra Valley, and none on City of Tucson properties. The landform characteristic of the Avra Valley parcels is deep valley fill, with materials derived from the Tucson Mountains on the east and the Waterman and Roskrige Mountains on the west. Soils are deep alluvial, and consist of varying proportions of sand, loam, and gravel. No natural permanent or semi-permanent water is present on any of the parcels. Many of the parcels are within the 100-year floodplain of Brawley Wash, and show signs of having been covered by floodwaters in recent decades. Most of the parcels have been disturbed by agricultural activities, including irrigated farming that occurred before purchase by the City.

Landowners and managers neighboring the Avra Valley parcels include the Arizona State Land Department (ASLD), Bureau of Land Management, Tohono O'odham Nation, and private landowners. Adjacent land uses include agricultural production (cotton, wheat, alfalfa), low-density residential, and open space.

Vegetation communities on City-owned Avra Valley lands include upland and riparian communities, both of which have been extensively modified by human activities. Upland vegetation communities on City-owned properties in the Avra Valley include Scrub Grassland, Sonoran Desertscrub, and Sonoran Vacant or Fallow Land. Riparian vegetation communities include Sonoran Desertscrub Xeroriparian, Sonoran Riparian Deciduous Forest and Woodland (both mesquite and cottonwood-willow series), and Sonoran Deciduous Riparian Scrub.

A total of 74 special-interest species were evaluated for potential occurrence on the City-owned lands. A special interest species is defined herein as any species of interest to any regulatory or management agency of the Federal, State or local government. Species considered here include:

- Species that may be found in Pima County that are currently listed, proposed, or candidates for listing by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA);
- Species considered as Wildlife Species of Special Concern In Arizona (WSCA) by the Arizona Game and Fish Department that are known to occur in the Avra Valley area; and
- Species included as Priority Vulnerable Species in Pima County's SDCP.

Of these 74 species, 22 were considered as having the potential to occur on City-owned parcels. Federally listed threatened, endangered, proposed, or candidate species that might occur on one or more of the parcels are: Pima pineapple cactus, cactus ferruginous pygmy-owl, yellow-billed cuckoo, and lesser long-nosed bat.

Possible City liability for take under the Endangered Species Act and suggestions for avoidance of take are considered. Liability is limited because likelihood of occurrence for the above-mentioned species is limited. Take of cactus ferruginous pygmy-owl and Pima Pineapple cactus can be minimized or avoided by conducting presence/absence surveys on those parcels that have habitat conditions considered potentially suitable for these species. Chances of encountering either species on any of the City-owned parcels are minimal. Take of yellow-billed cuckoo could potentially occur on parcels along the Santa Cruz River, but the presence of cuckoo as a nesting species is not likely unless habitat conditions improve over those currently found. Take of lesser long-nosed bat is highly unlikely because none of the parcels provide roosts or habitat conditions considered suitable for this species.

The situation with regard to the listing of the cactus ferruginous pygmy-owl (CFPO) and the designation of critical habitat is dynamic. In August 2003, the Ninth Circuit Court of Appeals determined that the USFWS "did not articulate a rational basis... for its finding that the discrete Arizona pygmy-owl populations is significant..." and the listing was remanded to the District Court where it will be either upheld or rescinded. For now, however, the owl remains listed as an endangered species under the protection of the ESA. Critical habitat for the CFPO was proposed in November 2002, and the proposed critical habitat includes some City-owned lands. In the most recent Draft Recovery Plan (January 2003), several City-owned parcels are within the boundaries of a proposed CFPO recovery area. Of these, two parcels are currently developed or proposed as CAVSARP and SAVSARP project areas. Of particular concern is that these parcels appear to have been identified as a critically important connecting corridor for owls in the Recovery Plan. It is, therefore, possible that the final designated critical habitat boundaries will include these sites. If the listing of the species as endangered is upheld, and if the final designated critical habitat includes City-owned lands, then mitigation may be required in further development of some City projects in the Avra Valley.

Potential mitigation opportunities for Pima Pineapple cactus are limited because there is very little if any potentially suitable habitat in the study area. Potential mitigation opportunities for cactus ferruginous pygmy-owl depend to a large degree on whether critical habitat includes any of the City-owned lands. Other potential mitigation opportunities may exist for species that are not listed under the Endangered

Species Act, but are currently considered Potentially Vulnerable Species in the Sonoran Desert Conservation Plan being developed by Pima County. Possibilities include fishes, frogs, and birds.

## 1.0 INTRODUCTION

The City of Tucson owns almost 24,000 acres of land in the Avra Valley, unincorporated Pima County, Arizona. This report summarizes observations and available information on the Avra Valley lands with regard to animal and plant species that are considered special interest species. It was prepared at the request of the City of Tucson to support decisions that might be made in planning for the management of these Avra Valley properties. To this end, the report includes the following: (1) a biological evaluation of the potential for species listed as threatened or endangered under the federal Endangered Species Act and other special interest species to occur on City-owned properties in the Avra Valley; (2) a review of potential opportunities and constraints for mitigation and habitat enhancement for the species that potentially may occur on these properties; and (3) a foundation for the future preparation of a Habitat Conservation Plan (HCP) for these species.

Acreage numbers given in the text and appendix are approximate and rounded to whole numbers, based on the delineation of vegetation types on aerial photographs and calculations made using ArcView.

Sources of information considered in this report include:

- The website prepared for Pima County as part of the Sonoran Desert Conservation Plan (SDCP) (<http://www.dot.co.pima.az.us/cmo/sdcpmaps/>);
- Reports compiled as part of the SDCP;
- Data compiled by the Arizona Heritage Data Management System;
- Data compiled for the Arizona Breeding Bird Atlas;
- *Avra Valley Land Use Study for City of Tucson Property Holdings* (March 1996), prepared by the City of Tucson;
- Map of Tucson Well Water Rights and Historic Irrigated Acreage Within City of Tucson Farm Holdings in Avra Valley; and
- Personal experience of the authors, Kenneth J. Kingsley and Kenneth J. Kertell, who have visited all of the Avra Valley properties addressed in this study.

## **2.0 PROJECT AREA**

### **2.1 LOCATION**

The Avra Valley lands considered in this report encompass 26 parcels, totaling approximately 23,920 acres. Figure 1 shows the locations of the 26 parcels; brief descriptions of each parcel are included in Appendix A. The City of Tucson purchased these lands over a period of more than 20 years. The primary management goals for the Avra Valley lands has been to secure the water rights associated with the lands and preserve groundwater for urban use.

Landowners and managers neighboring the Avra Valley parcels include the Arizona State Land Department (ASLD), Bureau of Land Management, Tohono O'odham Nation, and private landowners. Adjacent land uses include agricultural production (cotton, wheat, alfalfa), low-density residential, and open space. Figure 1 identifies the ownership/management status of neighboring lands.

### **2.2 GEOLOGY, LANDFORMS, AND FLOODING**

Figure 2 is a natural color satellite image of the Avra Valley, showing City-owned parcels, major landforms, and the designated 100-year floodplain. Elevations of the Avra Valley lands range from approximately 2,650 ft (807 m) at the southernmost parcel, to 1,890 ft (576 m) at the northernmost parcel. There are few bedrock outcrops in the Avra Valley, and none on City of Tucson properties. The landform characteristic of the Avra Valley parcels is deep valley fill, with materials derived from the Tucson Mountains on the east and the Waterman and Roskrige Mountains on the west. Soils are deep alluvial, and consist of varying proportions of sand, loam, and gravel.

The major drainage through the Avra Valley is Brawley Wash, which is a complexly braided system with many small tributaries. Brawley Wash is the downstream continuation of Avra Wash, and is a major tributary of the Santa Cruz River. The Avra Valley is generally flat. Floodwater drainage throughout most of the Avra Valley is by sheet flow, which collects in a few tributaries of Brawley Wash, or impounds behind man-made structures, such as roads and berms. Much of the City-owned property is within the Federal Emergency Management Agency Designated 100-year floodplain. Major flood events occurred in this area in 1983 and 1993, with water remaining for several months on some City-owned properties. Evidence of flooding in the Avra Valley includes dead trees, bare ground, and deep silt deposits. Following the 1993 floods, some impediments to surface flow (i.e. berms) were removed and some drainage ditches were dug. These actions may reduce future flood impacts to some of the City-owned lands.

### **2.3 WATER**

There is no naturally occurring surface water on any of the City of Tucson properties, and no known naturally occurring surface water anywhere in the Avra Valley. The Santa Cruz River is an effluent-

Figure 1.       Locations of City of Tucson Avra Valley Lands and neighboring land ownership.



Figure 2.        Satellite image of Avra Valley, indicating City-owned parcels and designated floodplain.

dominated stream that crosses the northern boundary of the Avra Valley, intersecting three of the City properties discussed in this report (parcels 1, 2A, and 5).

## 2.4 VEGETATION

Vegetation communities on City-owned Avra Valley lands include upland and riparian communities, both of which have been extensively modified by human activities. The system of vegetation classification currently used in the SDCP<sup>1</sup> is followed here. Distribution of vegetation communities in the Avra Valley is depicted in Figure 3. Several different vegetation maps of the Avra Valley have been produced over the past several years; the most recent available maps are used for this report (Pima County SDCP Website, Vegetation Composite and Harris Riparian maps).<sup>2</sup>

### 2.4.1 Upland Vegetation

Upland vegetation communities on City-owned properties in the Avra Valley include:

Scrub Grassland, also called Semidesert Grassland (BLP Code 143.1). This community is present at the south end of the Avra Valley at an elevation range of approximately 2,650 ft to 2,300 ft. It is present on City of Tucson parcels 23, 24, and 25. The dominant tree in this community is the velvet mesquite (*Prosopis velutina*), and the dominant shrub is creosote bush (*Larrea tridentata*). Additional shrub species include burroweed (*Isocoma tenuisecta*) and snakeweed (*Gutierrezia* spp.). Some native perennial and annual grass species occur, as well as the introduced Lehmann lovegrass (*Eragrostis lehmanniana*), which is the most abundant grass species in the Avra Valley area. This community is also known as Southern Arizona Semidesert Grassland, Sonoran Palo Verde-Mixed Cacti/Semidesert Grassland, Semidesert Mixed Grass-Mixed Scrub, and Semidesert Mixed Grass-Mesquite under other classification systems. Vegetation series and associations that occur within this community include:

#### Mixed grass-scrub series (143.15)

Mixed grass-mesquite association (143.152) occupies part of the area south of Arizona Highway 86, including a small portion of Parcel 25. This includes grass and some shrubs, the most prevalent of which is mesquite growing as a shrub in an upland situation.

Mixed grass-mixed scrub association (143.155) occupies a small portion of the valley north of Arizona Highway 86, including part of parcels 23 and 24. This association includes a mixture of grass and shrub species, with no species being particularly dominant.

Sonoran Desertscrub (BLP Code 154.1). This is the major desert vegetation community of Pima County, and the most prevalent vegetation community within the Avra Valley. It occurs on all City-owned parcels

<sup>1</sup> Brown, D.E. (ed.) 1994. Biotic communities: southwestern United States and northwestern Mexico. University of Utah Press. Salt Lake City.

<sup>2</sup> <http://www.dot.co.pima.az.us/gis/maps/mapguide/mgmap.cfm?path=/cmo/sdcpmaps/sdcp.mwf>

or portions of City-owned parcels that have not been used previously for agricultural production. Sonoran Desertscrub is divided into two series (depending upon the dominant vegetation), the presence of which is dependent to a large degree on slope, soils, and exposure. Vegetation series that occur within this community include:

Creosote-bursage series (154.11) is dominated by creosote bush and triangle burr ragweed (*Ambrosia deltoidea*). This series is prevalent on lower elevation lands that are flat and generally have very deep, fine alluvial soil. Most of the undisturbed upland vegetation on City-owned parcels in the Avra Valley is this series.

Paloverde-mixed cacti series (BLP Code 154.12) occurs on the higher elevation slopes at the edges of the Avra Valley and on rocky soils. This association generally is dominated by yellow paloverde (*Parkinsonia microphylla*) and triangle burr ragweed. Saguaro (*Carnegiea gigantea*) and other cacti may also be present, although there are few present on the City-owned lands. This series has not been identified as being present on City-owned parcels in the Avra Valley.

Sonoran Vacant or Fallow Land (BLP Code 364.1). This is the dominant vegetation community on City-owned lands. This community consists of agricultural lands that are fallow or in the early stages of abandonment, and vacant lots within the urban setting. Plants commonly established here include velvet mesquite, burroweed, desert globe mallow (*Sphaeralcea ambigua*), prickly Russian thistle (*Salsola tragus*), silverleaf nightshade (*Solanum elaeagnifolium*), western tansymustard (*Descurainia pinnata*), shaggyfruit pepperweed (*Lepidium lasiocarpum*), and several species of grasses, mostly non-native. On some of the City-owned lands, non-native grasses were planted in the 1980's. Mowing of vegetation occurs periodically on many of the City-owned parcels. The goal of this management technique is to prevent weed growth, but it also has the consequence of preventing succession to a shrub or tree-dominated plant community. This vegetation type is not mapped in Figure 3, but is included in vegetation acreage calculations and descriptions of each parcel in Appendix A.

## **2.4.2 Riparian Vegetation**

Riparian vegetation communities on City-owned properties in the Avra Valley include:

Sonoran Desertscrub Xeroriparian (BLP Code 154.10). Vegetation found along the normally dry washes within the Sonoran Desertscrub community is classified as xeroriparian. This is a shrub-dominated riparian community. Velvet mesquite, which can occur as a shrub or small tree is the most abundant species. Ironwood (*Olneya tesota*) may also be present. Other shrubs include desert broom (*Baccharis sarothroides*), catclaw acacia (*Acacia greggii*), and burrobrush (*Hymenoclea monogyra*). This type of riparian vegetation is present on most of the City-owned properties in the Avra Valley.

Sonoran Riparian Deciduous Forest and Woodland (BLP Code 224.50). This is a deciduous riparian community dominated either by velvet mesquite (as trees) or Fremont cottonwood (*Populus fremontii*)

Figure 3. Vegetation communities in the Avra Valley (source: Pima County SDCP website).



and/or Goodding's willow (*Salix gooddingii*). Usually perennial or near-perennial streams or springs are necessary to provide water for the trees, although this is not always the case for the mesquite series. This community is divided into the following two series, based on the dominant tree species:

Mesquite series (224.52). This series is characterized by structurally diverse stands of velvet mesquite that range from open to dense. Portions of the series contain a high density of mesquite mistletoe (*Phoradendron californicum*), a native parasite that may indicate stress to the trees. Other species commonly present in this series are catclaw acacia and blue palo verde (*Parkinsonia florida*). Midstory species include pitseed goosefoot (*Chenopodium berlandieri*), lotebush (*Zizyphus obtusifolia*), and four-wing saltbush (*Atriplex canescens*). Prickly Russian thistle, camphorweed (*Heterotheca subaxillaris*), and several species of grasses, vines and forbs are present in the understory. This series is present on parcels 2B, 5, 11, 17, 18, 24, and 26.

Cottonwood-willow series (224.53). This series is dominated by Fremont cottonwood and Goodding's willow. Trees may be more than 50 ft tall and very dense. Other species commonly found in this community include velvet ash (*Fraxinus pennsylvannica* var. *velutina*), netleaf hackberry (*Celtis reticulata*), velvet mesquite, and salt cedar (*Tamarisk ramosissima*). This series is present on parcel 1.

Sonoran Deciduous Riparian Scrub (BLP Code 234.7). This is a shrub-dominated riparian community. The most abundant species is velvet mesquite, which can occur as a large, dense shrub or small tree. Other shrubs include desert broom, catclaw acacia, and burrobrush. This community is subject to frequent flooding, which prevents it from maturing to a tree-dominated community. This series is present on parcels 1 and 5.

## 2.5 SPECIAL INTEREST SPECIES

A special interest species is defined herein as any species of interest to any regulatory or management agency of the Federal, State or local government. Table 1 lists the special interest species considered in this report. Included are:

- Species that may be found in Pima County that are currently listed, proposed, or candidates for listing by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA);
- Species considered as Wildlife Species of Special Concern In Arizona (WSCA) by the Arizona Game and Fish Department that are known to occur in the Avra Valley area; and
- Species included as Priority Vulnerable Species in Pima County's SDCP.

Table 1 lists all special interest species considered, characteristics of habitats in which they may occur, and an evaluation of the likelihood of each species occurring on City-owned properties in the Avra Valley under current conditions.

Species that are known to occur or are considered likely to occur on the Avra Valley lands may provide mitigation opportunities for the City of Tucson. Also, some species that are not currently known to occur on the Avra Valley lands may be appropriate candidates for introduction (or re-introduction, if they may once have occurred there).

Table 1. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>PLANTS</b>			
Huachuca water umbel ( <i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i> )	USFWS E USFS-S ADAHS PVS	A semi-aquatic plant (requiring permanent water) formerly found in cienegas and streams in the Santa Cruz and San Pedro River valleys. Critical habitat has been designated for this species, but none is in Pima County.	Highly unlikely to occur under present conditions. This species is no longer known from the Santa Cruz River, from which it was extirpated. Possibly could be re-introduced on parcels 1, 2A, and 5, or in created wetlands.
Kearney's blue star ( <i>Amsonia kearneyana</i> )	USFWS E USFS-S ADAHS	Known only from a few locations in the Baboquivari Mountains at 3,600-3,800 ft with Arizona walnut, Mexican blue oak, and velvet mesquite.	Extremely unlikely to occur. The Avra Valley lands are approximately 1,000 ft below the normal elevation range for this species.
Nichol's Turk's head cactus ( <i>Echinocactus horizontalis</i> var. <i>nicholii</i> )	USFWS E ADAHS PVS	Known only from a very small area between 2,400-4,100 ft on dissected alluvial fans at the foot of limestone mountains or on limestone mountainsides.	Extremely unlikely to occur. The Avra Valley lands do not contain the limestone rock substrates required by this species.
Pima pineapple cactus ( <i>Coryphantha scheeri</i> var. <i>robustispina</i> )	USFWS E USFS-S ADAHS PVS	Found south of Tucson, between the Santa Rita and Baboquivari Mountains, where it occurs at elevations between 2,300 and 4,500 ft. Most of the known locations are in the Altar and Avra Valleys, Santa Cruz River Basin, and the alluvial fans of the Sierrita, Santa Rita, Empire, Coyote, and Pajarito Mountains.	Possibly may occur on parcels 24, 25, and 26. The Avra Valley lands are mostly north of the known geographic range of the species.
Acuña cactus ( <i>Echinomastus erectocentrus</i> var. <i>acunensis</i> )	USFWS C USFS-S ADAHS PVS	Found in Arizona Upland Subdivision of the Sonoran Desertscrub on well-drained knolls and gravel ridges at elevations between 1,300 and 2,000 ft. In 1992, known to occur in only two Arizona locations, near Organ Pipe Cactus National Monument and near Florence.	Extremely unlikely to occur. The Avra Valley lands are more than 60 miles from the nearest known locations of the species.
Gooddings onion ( <i>Allium gooddingii</i> )	USFWS CA USFS-S ADAHS	This species occurs in forested drainage bottoms and on moist north facing slopes of mixed conifer and spruce forest at elevations above 7,500 ft.	Extremely unlikely to occur. The Avra Valley lands are 5,000 ft below the elevation range of this species. Vegetation communities and substrates in the Avra Valley lands are not similar to those from which this species is known.
Gentry indigobush ( <i>Dalea tentaculoides</i> )	USFWS SOC USFS-S ADAHS PVS	Not currently known from Pima County, but unknown populations may occur in rocky canyon bottoms that are not grazed. Known only in Sycamore Canyon drainage in the Atascosa Mountains, Pajarito Mountains, Santa Cruz County, and Baboquivari Mountains.	Extremely unlikely to occur. The Avra Valley lands are more than 25 miles from the known range of the species, and do not include rocky canyon bottoms that are not grazed.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>PLANTS</b>			
needle-spined pineapple cactus ( <i>Echinomastus erectocentrus erectocentrus</i> )	USFWS SOC USFS-S ADASR PVS	Pima County encompasses much of the known range of this cactus variety. Occurs in Sonoran Desertscrub and Semidesert Grassland vegetation communities where it is found on alluvial fans and hills generally from 3,000 to 4,600 ft, in the foothills of the Santa Catalina, Rincon and Santa Rita Mountains.	Extremely unlikely to occur. The Avra Valley lands are below the known elevation range of this species, and the nearest known population is more than 30 miles east of the Avra Valley.
Tumamoc globeberry ( <i>Tumamoca macdougalii</i> )	Removed from Endangered Species List in 1993 USFS-S ADASR PVS	The range of this plant covers some 31,000 square miles of Sonoran Desert from Sonora, Mexico to Tucson, Arizona, west to Organ Pipe Cactus National Monument and north to Pinal County, Arizona. In Tucson, found on hot, dry, south facing slopes of basalt and along desert washes. The largest population is found in creosote bush desertscrub on gravelly loams primarily derived from weathered granites.	Known to occur in the general area. This plant has been found on lands close to those owned by the City of Tucson, and is likely to occur on those City-owned lands with natural open space.
Pima Indian mallow ( <i>Abutilon parishii</i> )	USFWS SOC USFS-S ADASR	This species is found in mesic situations in full sun in Sonoran Desertscrub at 1,720 to 4,900 ft. It occurs on rocky hillsides, cliff bases, canyon bottoms, lower side slopes and ledges of canyons among rocks and boulders. In riparian zones, it occurs on flat secondary terraces but typically not in canyon bottoms. Often found near trails, probably due to the influence of the trail on the light, heat, and water of the microhabitat.	Unlikely to occur. Although this species is known to occur in the general area, within Saguaro National Park, suitable habitat is not present on any of the City-owned lands.
Thornber's nipple cactus ( <i>Mammillaria thornberi</i> )	ADA-SR	Found in Pinal, Pima and Maricopa counties south into Sonora, Mexico. Occurs in Sonoran Desertscrub on sandy flats and lower bajadas at 200 to 600 to 2500 ft.	Known to occur in the general area, and likely to occur on City-owned properties with relatively undisturbed vegetation.
<b>ANIMALS</b>			
<b>Invertebrates</b>			
Arkenstone Cave pseudoscorpion ( <i>Albiorix anophthalmus</i> )	PVS	Known from only one cave (Arkenstone Cave) in Colossal Cave Park east of Tucson.	Extremely unlikely to occur. The Avra Valley is approximately 20 miles from the only known location.
<b>Fish</b>			
talus snails ( <i>Sonorella</i> spp.) (15 taxa)	<i>S. eremita</i> was proposed for listing but is now covered by a Conservation Agreement Other species have no status. PVS	Apparently all 15 taxa occur on steep, talus slopes (generally or exclusively of limestone) in isolated, undisturbed areas in mountains or hills.	Extremely unlikely to occur. None of the City-owned parcels have talus slopes or exposed rock.



Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Fish</b>			
desert pupfish ( <i>Cyprinodon macularius</i> )	USFWS E USFS-S WSCA PVS	Species historically present in the Santa Cruz River, but is considered extirpated.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
Gila topminnow ( <i>Poeciliopsis occidentalis occidentalis</i> )	USFWS E USFS-S WSCA PVS	In Arizona, most of the remaining populations occur in the upper Santa Cruz River system, Sonoita Creek, and Cienega Creek, and the middle Gila River.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
loach minnow ( <i>Tiaroga cobitis</i> )	USFWS T USFS-S WSCA	Historically known from the San Pedro River, which is designated Critical Habitat. Currently known populations are found in the upper Gila, San Francisco, Blue, Tularosa, Black, and White Rivers, as well as Aravaipa, Eagle, Campbell Blue, and Dry Blue Creeks.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
spikedace ( <i>Meda fulgida</i> )	USFWS T USFS-S WSCA	Historically known from the San Pedro River, which is designated Critical Habitat. In Arizona, populations are found in Aravaipa Creek, Eagle Creek, and a portion of the upper Verde River. Undiscovered populations may exist in unsampled Gila basin streams.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
Gila chub ( <i>Gila intermedia</i> )	USFWS PE USFS-S WSCA PVS	The Gila chub is currently known from the following drainages in Arizona: Santa Cruz River (Cienega Creek, Sabino Canyon, Sheehy Spring), middle Gila River, San Pedro River, Agua Fria River, and Verde River. However, it is considered extirpated from the mainstream Santa Cruz River in Arizona. <sup>3</sup>	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
longfin dace ( <i>Agosia chrysogaster</i> )	USFWS SOC PVS	Historically found throughout Arizona. Currently found in a broad area as disjunct populations. Generally in moving water over a sandy substrate.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.

<sup>3</sup> Weedman, D. A., A.L. Girmendonk, and K.L. Young. 1996. Status review of Gila chub, *Gila intermedia*, in the United States and Mexico. Nongame and Endangered Wildlife Program Technical Report 91. Arizona Game and Fish Department, Phoenix, Arizona.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Fish</b>			
speckled dace ( <i>Rhinichthys osculus</i> )	USFWS SOC USFS-S	In Arizona, found in Colorado, Bill Williams, and Gila River drainages, except slower and warmer portions of Colorado River mainstream. Found in rocky riffles, runs, and pools of headwaters, creeks, and small to medium rivers, usually in water less than 0.5 m (1.6 ft.) deep, often congregating below riffles and eddies. Breeding adults prefer swift water.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
desert sucker ( <i>Catostomus</i> = <i>Pantosteus clarkii</i> )	USFWS SOC PVS	Historically this fish occurred in the San Pedro and Santa Cruz Rivers and their tributaries. It is known consistently only from some of the tributaries of the San Pedro. Native to the Gila and San Francisco drainages; widespread in the Gila and Bill Williams river basins.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
Sonora sucker ( <i>Catostomus insignis</i> )	USFWS SOC PVS	Historically this fish occurred in the San Pedro and Santa Cruz Rivers and their tributaries. It is known consistently only from some of the tributaries of the San Pedro. Native to the Gila and San Francisco drainages; widespread in the Gila and Bill Williams river basins.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
<b>Amphibians and Reptiles</b>			
lowland leopard frog ( <i>Rana yavapaiensis</i> )	USFWS SOC USFS-S WSCA PVS	Occurs in south-central, central, west-central, and extreme northwestern Arizona, south and west of the Mogollon Rim. Recently found in 5 canyons in the Rincon Mountain District of Saguaro National Park in Pima County. Known from 10-20 sites in eastern Pima County.	Extremely unlikely to occur. No natural permanent aquatic habitat is present on any of the City-owned parcels. There are bullfrogs present on the parcels that receive effluent water via the Santa Cruz River. The presence of bullfrogs probably precludes survival of native frogs.
Chiricahua leopard frog ( <i>Rana chiricahuensis</i> )	USFWS T USFS-S WSCA PVS	This species typically occurs in a wide variety of natural and human-made aquatic habitats in deserts, grasslands, chaparral, and oak woodlands.	Extremely unlikely to occur. No natural permanent aquatic habitat is present on any of the City-owned parcels. There are bullfrogs present on the parcels that receive effluent water via the Santa Cruz River. The presence of bullfrogs probably precludes survival of native frogs.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Amphibians and Reptiles</b>			
Great Plains narrow-mouthed toad ( <i>Gastrophryne olivacea</i> )	WSCA	In Arizona, in the vicinity of Patagonia, Santa Cruz Co., and just south of San Xavier Mission and near Robles, Pima Co. to San Simon Wash between Quijotoa and Ajo; ranges north to 24 miles south of Casa Grande. Secretive, hiding in burrows or under bark, in rotten logs, under rocks, or in crevices near a water source during the day. Found in mesquite semi-desert grassland to oak woodland, in the vicinity of streams, springs and rain pools.	Known to occur in the Avra Valley, and possibly may occur on one or more of the City-owned parcels, especially those that have not been completely disturbed by historic agriculture.
Sonoyta mud turtle ( <i>Kinosternon sonoriense longifemorale</i> )	USFWS C	The only known population of this species is from Quitobaquito Springs in Organ Pipe Cactus National Monument at 1,100 ft.	Extremely unlikely to occur. A different subspecies of this turtle occurs along the Santa Cruz River. <sup>4</sup> It may occasionally be found on Parcels 1, 2A, and 5.
desert tortoise ( <i>Gopherus agassizi</i> )	USFWS SOC WSCA	Widespread in the Sonoran Desert; from about 510 ft in Mojave desertscrub to semidesert grassland and interior chaparral at about 5,300 ft. Requires loose soil in which to excavate burrows below rocks and boulders, but may also use rock crevices. Tortoises occasionally burrow under vegetation, less often dig soil burrows on more or less open slopes, and also use caliche caves in incised wash banks. They will also rest directly under live or dead vegetation without constructing a burrow.	Likely to occur on some of the City-owned properties; however, none of the properties appear to have habitat that would be considered high quality for the Sonoran Desert population of Desert Tortoise. This population is generally associated with rocky slopes and hills, and there are none on the parcels.
Tucson shovel-nosed snake ( <i>Chionactis occipitalis klauberi</i> )	PVS	Occurs from south of Tucson northward along Avra Valley to Pinal County and Maricopa County. Current distribution in Pima County poorly known; may have been eliminated from much of the Avra Valley. Found on lowland valley floors in areas with sand and loose soil.	Possibly may occur in undisturbed portions of the City-owned lands.
Organ Pipe shovel-nosed snake ( <i>Chionactis paluostriis organica</i> )	PVS	In Arizona, most if not all of the current range is in Organ Pipe Cactus National Monument. May occur on the Tohono O'odham Nation in western and central Pima County.	Extremely unlikely to occur. The Avra Valley is more than 60 miles from known occurrences.

<sup>4</sup> Arizona Game and Fish Department. 1997. *Kinosternon sonoriense*. Unpublished abstract compiled and edited by the Heritage Data Management System. Arizona Game and Fish Department, Phoenix, AZ. 2 pp; and K. J. Kingsley, personal observations.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Amphibians and Reptiles</b>			
giant spotted whiptail <i>Cnemidophorus burti stictogrammus</i> )	USFWS SOC USFS-S PVS	In Pima County, this species has been recorded in the Santa Catalina, Santa Rita, and Baboquivari Mountains. Formerly common in Sabino Canyon. Extirpated from most of the Santa Cruz River valley. Inhabits mountain canyons, arroyos, and mesas, entering lowland desert along stream courses and riparian areas.	Possibly may occur, particularly along Brawley Wash.
red-backed whiptail <i>(Cnemidophorus burti xanthonotus)</i>	USFWS SOC PVS	The entire range of this subspecies includes the southwest-central border of Arizona in Pima County and northern Sonora. In Pima County, known primarily from the Ajo Mountains at Organ Pipe Cactus National Monument. Known habitat includes areas with rocky slopes and semidesert grassland.	Possibly may occur.
ground snake <i>(Sonora semiannulata)</i>	PVS	In Pima County, small numbers occur in many small populations on the Tohono O'odham Nation, its eastern border between Marana and Eloy, and rarely around Tucson. Inhabits plains, valleys, and foothill habitats; found mostly near mountains with higher slopes.	Possibly may occur.
Mexican garter snake <i>(Thamnophis eques megalops)</i>	USFWS SOC USFS-S WSCA PVS	In Pima County, currently known only from Cienega Creek; extirpated from the Santa Cruz and Rillito rivers, and Tanque Verde and Pantano washes in the Tucson area, and not known to have occurred along the San Pedro in this area <sup>5</sup> . Inhabits areas of permanent water with lush vegetation at elevations ranging from 1,739 to 6,152 ft.	Extremely unlikely to occur. No natural permanent aquatic habitat is present in the project area or on any of the City-owned parcels.
desert box turtle <i>(Terrapene ornata luteola)</i>	PVS	In Arizona, occurs in the southern portion of the state from the New Mexico border to the eastern base of the Baboquivari Mountains at elevations ranging from sea level to 6,600 ft. Has been observed in grasslands of the Empire-Cienega Resource Conservation Area and in the valley of the Santa Cruz River near Sahuarita. Primarily a prairie turtle that inhabits arid and semi-arid treeless plains and rolling grass and shrub lands where soils are sandy.	Possibly may occur.

<sup>5</sup> Rosen, P.C. and C.R. Schwalbe. 1988. Status of the Mexican and narrow-headed garter snakes (*Thamnophis eques megalops* and *Thamnophis rufipunctatus rufipunctatus*) in Arizona. Unpubl. Report from Arizona Game and Fish Department. (Phoenix, Arizona) to U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Birds</b>			
bald eagle ( <i>Haliaeetus leucocephalus</i> )	USFWS T USFS-S WSCA	A small Arizona resident population of about 40 pairs nests primarily along the Salt and Verde Rivers. Additional nest sites are along the Gila, Bill Williams, Agua Fria, and San Pedro River drainages (downstream from Pima County, at the Gila River confluence). Nest sites are high in trees, on cliffs, or on pinnacles in close proximity to water that has large fish.	Extremely unlikely to occur. There are no large bodies of water with large fish on the Avra Valley lands. However, wandering individuals may occasionally be temporarily attracted to the Clearwater project recharge basins.
brown pelican ( <i>Pelecanus occidentalis</i> )	USFWS E	Generally a coastal resident, the brown pelican can occasionally be found on Arizona's lakes and larger rivers, or even in the City of Tucson following episodes of strong winds from a coastal area. It depends on large bodies of water with plentiful fish.	Extremely unlikely to occur. There are no large bodies of water with large fish on the Avra Valley lands. However, wandering individuals may occasionally be temporarily attracted to the Clearwater project recharge basins.
cactus ferruginous pygmy-owl ( <i>Glaucidium brasilianum cactorum</i> )	USFWS E USFS-S WSCA PVS	Historically, the primary habitat of this owl in central and southern Arizona was apparently cottonwood-willow forests, mesquite bosques, and Sonoran Desertscrub vegetation communities. Currently, it is known in Arizona only from the following two vegetation communities: (1) Sonoran Desertscrub in braided-wash systems with paloverde, ironwood, and mesquite; and (2) Semidesert Grassland with drainages containing mesquite, hackberry, and ash. Geographically, the majority of current CFPO records are concentrated in northwest Tucson and the Altar Valley. Critical Habitat was proposed anew in 2002 and includes some City-owned lands in the Avra Valley.	Unlikely to occur, but see discussion following this table.
masked bobwhite ( <i>Colinus virginianus ridgewayi</i> )	USFWS E USFS-S WSCA	The one known population in the state is a reintroduced population at Buenos Aires National Wildlife Refuge. It is known only from dense, tall desert grassland.	Extremely unlikely to occur. The southernmost City-owned parcel is approximately 18 miles from the Buenos Aires National Wildlife Refuge. There is no evidence that the re-introduced population is expanding. There is no dense, tall desert grassland vegetation on any City-owned parcel.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Birds</b>			
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	USFWS T USFS-S WSCA	Occurs in mature forest and woodland, shady wooded canyons and steep canyons.	Extremely unlikely to occur. The City-owned parcels are several thousand ft below the normal elevation range of this species, and vegetation conditions do not resemble those in which this species has been found.
southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	USFWS E WSCA PVS	Occurs in dense riparian habitats along streams, rivers, and other wetlands with cottonwood, willow, boxelder, buttonbush, and arrowweed.	Unlikely to occur. Most of the City-owned parcels do not have vegetation conditions or water that would be considered habitat for this species. Parcels 1, 2A, and 5 have some potential for developing suitable habitat, but do not appear to be suitable at this time.
yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	USFWS C USFS-S WSCA	In Arizona, yellow-billed cuckoos breed primarily in large blocks of cottonwood/willow riparian habitat along central and southern Arizona rivers. <sup>6</sup>	Likely to occur as a migrant on parcels 1, 2A, and 5. Cottonwood-willow vegetation along the Santa Cruz River on these parcels does not appear to be suitable for breeding.
tropical kingbird ( <i>Tyrannus melancholicus</i> )	USFS-S WSCA	A rare bird that is generally found in riparian woodland below 4,000 ft.	Known to occur occasionally in the general area, downstream from Parcel 1 <sup>7</sup> . Possibly may occur occasionally on Parcel 1.

<sup>6</sup> U.S. Fish and Wildlife Service. 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition to List the Yellow-billed Cuckoo (*Coccyzus americanus*) in the Western Continental United States. Federal Register 66: 38611-38626; and Corman, T.E. and R.T. Magill. 2000. Western yellow-billed cuckoo in Arizona: 1998 and 1999 survey report. Nongame and Endangered Wildlife Program Technical Report 150. Arizona Game and Fish Department, Phoenix, Arizona.

<sup>7</sup> Tucson Audubon Society. 1999. Davis and Russell's Finding Birds in Southeast Arizona. Tucson Az.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Birds</b>			
burrowing owl ( <i>Athene cunicularia</i> )	PVS	Considered rare in Pima County, it inhabits grasslands, open areas of desert-scrub, and disturbed areas. Recent reliable observations include the agricultural fields near Pinal Air Park, along the airstrip at Davis Monthan Air Force Base, and along the Santa Cruz River near 29 <sup>th</sup> Street. Inhabits grasslands, pastures, desertscrub, edges of agricultural fields, golf courses, vacant lots, and road embankments.	Reported to occur on Parcel 1. <sup>8</sup> Possibly may occur around other inactive agricultural fields, but none were observed during field reconnaissance.
rufous-winged sparrow ( <i>Aimophila carpalis</i> )	PVS	In Pima County, this species is fairly widespread in appropriate habitat. Specific locations include Saguaro National Park (east) and the Tucson area. Inhabits flat or gently hilly Sonoran Desertscrub vegetation with scattered trees and shrubs.	Likely to occur. Vegetation resembling that in which this species is often found is present on many of the parcels. However, none were detected during field reconnaissance.
Abert's towhee ( <i>Pipilo aberti</i> )	PVS	In Pima County, this species is relatively common along brushy washes and the effluent-dominated riparian woodland portion of the Santa Cruz River; also present in urban backyards especially those that are along washes.	Known to occur. Individuals may be found in mesquite on many parcels, and in cottonwood-willow areas on Parcel 1.
Bell's vireo ( <i>Vireo belli</i> )	PVS	In Pima County, this species is a common summer resident in dense shrubs and trees of lower canyons, generally below the oak zone, and along desert streams and washes in dense riparian vegetation.	Known to occur. Individuals may be found in mesquite on many parcels, and in cottonwood-willow areas on Parcel 1.
Swainson's hawk ( <i>Buteo swainsoni</i> )	USFWS SOC USFS-S WSCA PVS	In Arizona, this species breeds throughout the state in suitable open grassland habitats and open desertscrub that includes a grassland component.	Likely to occur. Nesting Swainson's Hawks have been reported in the general area, <sup>9</sup> and conditions on most of the City-owned lands resemble known foraging areas of this species.
<b>Mammals</b>			
lesser long-nosed bat ( <i>Leptonycteris curasoae yerbabuenae</i> )	USFWS E USFS-S WSCA PVS	Day roosts are in caves, abandoned tunnels, and unoccupied buildings. Forages on nectar, pollen, and fruits of paniculate agaves and columnar cacti.	Possibly may occur, flying over some of the parcels, but extremely unlikely to occur regularly on any of the parcels. There are no suitable roost sites and no food plants present on the parcels.

<sup>8</sup> <http://www.tucsonaudubon.org/conservation/scriber.htm>

<sup>9</sup> Tucson Audubon Society. 1999. Davis and Russell's Finding Birds in Southeast Arizona. Tucson, Az. And Arizona Breeding Bird Atlas data.

Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Mammals</b>			
Mexican gray wolf ( <i>Canis lupus baileyi</i> )	USFWS E USFS-S WSCA	Extirpated from the U.S. Has been reintroduced to sites in the Apache and Gila National Forests. Inhabits oak and pine/juniper savannahs in the foothills and mixed conifer woodlands above 4,000 ft.	Extremely unlikely to occur. This species was reintroduced to an area over 150 miles from the Avra Valley lands.
Sonoran pronghorn ( <i>Antilocapra americana sonoriensis</i> )	USFWS E WSCA	Small population in southwestern Arizona and adjacent Mexico.	Extremely unlikely to occur. Avra Valley is more than 100 miles from the nearest population and does not contain “extensive” desert grassland vegetation.
jaguar ( <i>Panthera onca</i> )	USFWS E USFS-S	Found near water in the warm tropical climate of savannah and forest. Rarely found in extensive arid areas. Individuals in Arizona have been found in Sonoran desertscrub up through subalpine conifer forest.	Extremely unlikely to occur. Individuals are very rare and wander widely; the probability of one being present in the Avra Valley is extremely low, although it cannot be completely ruled out.
ocelot ( <i>Felis pardalis</i> )	USFWS E USFS-S WSCA	Found in desert scrub communities with dense cover; there have been a handful of unconfirmed reports of individuals in the southern part of Arizona.	Extremely unlikely to occur. Although the Avra Valley contains desert scrub vegetation, cover is not “dense”. Avra Valley is not within known current range.
Mexican long-tongued bat ( <i>Choeronycteris mexicana</i> )	USFWS SOC USFS-S WSCA PVS	Known to occur at scattered locations in Pima County. In summer occupies mine tunnels, caves, and rock fissures primarily at elevations of 4,000 to 6,000 ft from the lower edge of the oak zone, through the pine-oak woodland, possibly to the pine-fir belt.	Possibly may occur, flying over some of the parcels, but extremely unlikely to occur regularly on any of the parcels. There are no suitable roost sites and no food plants present on the parcels.
Allen’s big-eared bat ( <i>Idionycteris phyllotis</i> )	USFWS SOC PVS	Not currently known from Pima County. In Arizona, most specimens have been collected from the southern Colorado Plateau, the Mogollon Rim, and adjacent mountain ranges. Inhabits ponderosa pine, pinyon-juniper, and riparian woodland vegetation types, as well as desertscrub.	Extremely unlikely to occur. This species is not known from the general area, and the area lacks any of the vegetation types in which this species has most frequently been found. There are no potentially suitable roost sites on any of the City-owned parcels.
western yellow bat ( <i>Lasiurus xanthinus</i> )	USFS-S WSCA PVS	Most known records of yellow bats from Arizona are from urban Tucson and Phoenix where they are associated with planted fan palms. This bat roosts in palm trees and riparian deciduous trees.	Unlikely to occur on any of the parcels, except possibly on Parcel 1 where there are some riparian deciduous trees.



Table 1., continued. Likelihood of Occurrence of Special Interest Species on City-owned Properties in the Avra Valley

Species	Status*	Range/Habitat	Likelihood
<b>Mammals</b>			
western red bat ( <i>Lasiurus blossevillei</i> )	USFS-S WSCA PVS	In Pima County, along riparian corridors with oaks, sycamores, and cottonwoods.	Unlikely to occur on any of the parcels, except possibly on Parcel 1 where there are some riparian deciduous trees.
California leaf-nosed bat ( <i>Macrotis californicus</i> )	USFWS SOC USFS-S WSCA PVS	Populations are known from inactive mines in most of the mountain ranges in Pima County. Nearby roosts include Tucson Mountain Park and several mines in the Silverbell Mountains.	Possibly may occur foraging over some of the parcels, but extremely unlikely to occur regularly or to roost on any of the parcels. No inactive mines are present on any of the parcels.
pale Townsend's big-eared bat ( <i>Plecotus townsendii</i> )	USFWS SOC PVS	In Pima County, this species is frequently found in inactive mines and caves, and occasionally in buildings. Occurs through a range of elevations and vegetation communities in Arizona including Sonoran Desertscrub, Madrean Evergreen Woodland, and coniferous forests.	Possibly may occur foraging over some of the parcels, but extremely unlikely to occur regularly or to roost on any of the parcels. No inactive mines are present on any of the parcels.
Merriam's mouse ( <i>Peromyscus merriami</i> )	PVS	Known primarily from dense, forest-like stands of mesquite (bosques); also found in thick stands of mesquite, cholla, prickly pear, paloverde, and grasses. There apparently is only one record of this species from Pima County in the last 30 years (from Organ Pipe Cactus NM). Most historic locations have been altered and recent records are lacking. Unknown whether this species still occurs along the Santa Cruz River.	Extremely unlikely to occur. Well-developed mesquite bosque habitat does not occur in this portion of the Avra Valley, which is more than 100 miles from the nearest known recent location for this species.
Arizona shrew ( <i>Sorex arizonae</i> )	USFWS SOC USFS-S WSCA PVS	Has not been found in Pima County; previous records from the Santa Rita Mts. are from outside of Pima County. All records are from high mountain ranges in southeastern Arizona and western New Mexico. In Arizona, they have been recorded in the Huachuca, Santa Rita, and Chiricahua Mountains.	Extremely unlikely to occur. The Avra Valley lands are several thousand ft below the elevation range of this species and vegetation communities and substrates in the Avra Valley lands are not similar to those known to support this species.

\*Status Definitions

USFWS E=Endangered, USFWS T=Threatened, USFWS P=Proposed Threatened or Endangered, USFWS C=Candidate for listing, USFWS CA= Conservation Agreement; USFWS SOC= Species of Concern; USFS-S= U.S. Forest Service Sensitive, WSCA= Wildlife of Special Concern in Arizona, ADAHS= Arizona Department of Agriculture Highly Safeguarded, ADASR= Arizona Department of Agriculture Salvage Restricted, PVS= Priority Vulnerable Species in Pima County. Most information is based on Recon (2001) and information from the Arizona Heritage Database Management System.

### 3.0 DISCUSSION

This section presents a more detailed discussion of those special interest species with the greatest likelihood of occurring on City-owned lands in the Avra Valley or that may be subject to ESA compliance for habitat-related impacts in the Avra Valley. It includes species that:

- are known to occur, either on the basis of available records or personal observations;
- are considered likely to occur but are not known to occur;
- might possibly occur or be introduced to the Avra Valley lands; and/or,
- for which critical habitat, or other legislative land classification, has been proposed or is likely to be proposed on or near City-owned lands.

The discussion is divided into two sections: (1) federally listed species, and (2) other special interest species (not federally listed).

### 3.1 FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES

#### 3.1.1 Huachuca Water Umbel

Huachuca water umbel is a semi-aquatic plant. It was historically found in the Santa Cruz River, but it has not been observed there for many years. It may be desirable for the City to consider establishing a population of this species in either the Santa Cruz River on parcels 1, 2A, and/or 5, or at created wetlands anywhere on City property. Parcels 1, 2A, and 5 are within a Priority Conservation Area, Tier 4 for this species (Figure 4). This means that these parcels are within the area identified as having the potential for restoration or enhancement.<sup>10</sup> However, it is highly unlikely that this would be considered as mitigation for take (as defined under the Endangered Species Act) because it is unlikely that the City would find itself in a situation where mitigation for this species would be necessary in this watershed. See the discussion on Mitigation Opportunities.

#### 3.1.2 Pima pineapple cactus

Pima pineapple cactus is known to occur in the Avra Valley, primarily south of Highway 86, but there are a few records of it being found north of the highway.<sup>11</sup> As part of the EES range study for this species, several plots close to, but not actually on, City-owned property (Parcels 24, 25, and 26) were surveyed for this species. Plants were found to the east and west of Parcel 25, to the east of Parcel 24, and to the west of Parcel 26, but the City-owned parcels were not searched and no plants were found on the plots that were located closest to City-owned parcels. Also, no plants were found more than two miles north of the highway, despite the presence of more than 25 plots located more than two miles north of the highway.<sup>12</sup> SWCA, Inc. biologists conducted a brief search on portions of parcels 24, 25, and 26 as part of the field

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<sup>10</sup> Sonoran Desert Conservation Plan. 2001. Priority Conservation Areas. Report prepared by Pima County.

<sup>11</sup> Ecosphere Environmental Services, Inc. Final Report. A range study of *Coryphantha scheeri* var. *robustispina*. Report prepared for U.S. Bureau of Reclamation.

<sup>12</sup> *Ibid.*

reconnaissance for this report, and saw no Pima Pineapple Cacti. It is possible that this species may be present on parcels 24, 25, and 26, but the undisturbed portions of these parcels do not closely resemble sites where Pima pineapple cacti have been found and it appears that these parcels may not be particularly good habitat for this species. Therefore, it is unlikely that these parcels would offer mitigation opportunities, such as mitigation banking, for this species. However, if any construction activities involving a federal permit or federal funding were to be undertaken on parcels 24, 25, and 26, a survey for this species would be advisable. The remaining Avra Valley parcels are outside the known geographic range of this species, and would not warrant surveys for this species prior to construction.

### **3.1.3 Gila Chub**

Gila chub is considered extirpated from the Santa Cruz River, but is known to occur in some of its tributaries. The USFWS published a proposal to list the species as endangered, with critical habitat, on August 9, 2002.<sup>13</sup> No portion of the Santa Cruz River was included in proposed critical habitat for this fish. It is possible, though very unlikely, that the final critical habitat designation might include the Santa Cruz River, and any actions that could potentially deplete the surface flow of water might be considered adverse modification. Options under this scenario might include implementation of a Safe Harbor Agreement, introduction of Gila chubs to the Santa Cruz River on City-owned property, or some form of mitigation plan, including guaranteeing a specific amount and quality of water.

### **3.1.4 Cactus Ferruginous Pygmy-owl**

The situation with regard to the listing of the cactus ferruginous pygmy-owl (CFPO) and the designation of critical habitat is dynamic. In August 2003, the Ninth Circuit Court of Appeals determined that the USFWS “did not articulate a rational basis... for its finding that the discrete Arizona pygmy-owl populations is significant...” and the listing was remanded to the District Court where it will be either upheld or rescinded. For now, however, the owl remains listed as an endangered species under the protection of the ESA. Critical habitat for the CFPO was proposed in November 2002, and the proposed critical habitat includes some City-owned lands. In the most recent Draft Recovery Plan (January 2003), several City-owned parcels are within the boundaries of a proposed CFPO recovery area. Of these, two parcels are currently developed or proposed as CAVSARP and SAVSARP project areas. Of particular concern is that these parcels appear to have been identified as a critically important connecting corridor for owls in the Recovery Plan. It is, therefore, possible that the final designated critical habitat boundaries will include these sites. If the listing of the species as endangered is upheld, and if the final designated critical habitat includes City-owned lands, then mitigation may be required in further development of some City projects in the Avra Valley.

At the current time (September 9, 2003), the CFPO is listed as an endangered species. Populations have been found upstream of Avra Valley along Altar Wash, and downstream in northwest Tucson, but none have been located in the immediate vicinity of the City-owned properties in the Avra Valley and vegetation conditions on the City-owned properties do not resemble those at sites where this species has

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<sup>13</sup> U.S. Fish and Wildlife Service. 2002. Endangered and Threatened Wildlife and Plants; Listing the Gila Chub as Endangered With Critical Habitat. Proposed Rule. Federal Register 67: 51948-51985.

Figure 4. The Avra Valley Lands with “Priority Conservation Areas” by species groupings from SDCP (Source: Pima County, 2002)

Figure 5. The Avra Valley Lands with Proposed “Conservation Land System” and Endangered Species Considerations (Source: Pima County, 2002).

been found. Specific surveys for this species were conducted over several years in association with development of the Clearwater Project, but no owls were found. The other City-owned Avra Valley lands have not to our knowledge been adequately surveyed for this species. Part or all of parcels 21, 23, 24 and 25 are designated as Recovery Areas in the Draft Recovery Plan and proposed as critical habitat (Figure 5). These designations may influence decisions regarding mitigation requirements for take or adverse modification of critical habitat. Mitigation was deemed necessary, for example, for impacts to critical habitat as part of the development of the Clearwater Project.

Several parcels are designated as Priority Conservation Area, Tier 23, in the SDCP. This Tier combines Tier 2, areas that would be of value to the reserve system, with Tier 3, critical landscape linkages. It is believed that Brawley Wash may provide a connection for owls moving between the Altar Valley and Northwest Tucson.

All of the Avra Valley parcels are within the area designated as Survey Zone 2 for this owl.<sup>14</sup> This zone includes the area within the currently known range of the owl (within Pima and southern Pinal counties) where there is a moderate potential for owls to occur. The USFWS recommends that all private landowners in this zone that are planning to remove any of the vegetation components of suitable habitat do one of the following:

1. Coordinate with USFWS to develop the property in a manner that avoids any negative effects to the pygmy-owl,
2. Survey the property to determine if an owl is present, or
3. Proceed as if pygmy-owls are present and develop a HCP so the activity can proceed.

These recommendations apply only to those areas that support suitable pygmy-owl habitat, which is defined as below 4,000 feet in elevation and with one or more of the following vegetation communities:

1. Riparian vegetation (such as cottonwoods, willows, mesquites, ash, or other trees growing along watercourses);
2. Sonoran desertscrub, particularly area containing saguaro cactus or other columnar cactus [8 feet or taller], with ironwood, mesquites, palo verde or other trees in association with at least some shrubs (acacia, prickly pear, desert hackberry, graythorn, etc.), and ground cover (triangle leaf bursage, burro week, grasses, etc.); or
3. Semi-desert grassland with drainages containing mesquite, hackberry, cottonwood, willow, ash, etc.

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<sup>14</sup> U.S. Fish and Wildlife Service. 2000. Recommended guidance for private landowners concerning the cactus ferruginous pygmy-owl.

Any of these vegetation types without saguaros, but which contain the appropriate trees and lower-level cover, are considered suitable if there are individual trees with a trunk diameter of 6 inches or greater measured at 4.5 feet above the ground. Many of the City-owned parcels in the Avra Valley have some individual trees with a trunk diameter of 6 inches or greater. Parcels with larger trees would likely require compliance with the USFWS recommendations for surveys prior to the implementation of projects that might impact vegetation.

The entire situation with regard to this species may change at any time in the near future as a result of court decisions. Until such decisions become final, it is most appropriate for the City to proceed under the currently available status and information.

### **3.1.5 Southwestern Willow Flycatcher**

Southwestern willow flycatcher inhabits dense riparian thickets. No suitable habitat for this species is present at this time on any of the parcels owned by the City of Tucson. However, the Santa Cruz River floodplain on Parcels 1, 2A, and 5 could be managed to create potentially suitable habitat for this species, though there is no assurance that habitat creation would be successful or that willow flycatchers would ever become established in the area, given their current limited abundance and distribution (they are not known to be established in the Santa Cruz River watershed at this time, though they apparently were historically known along the Santa Cruz River near Tucson<sup>15</sup>). Critical habitat was previously designated for this species, but was rescinded by court order. Previously designated critical habitat did not include the Santa Cruz River drainage or any land in Pima County. A new proposal for critical habitat was expected by the end of 2002, but was not released as of September 2003. The likely boundaries are not known at this time. It is possible, under the worst-case scenario, that the new critical habitat boundaries might include the Santa Cruz River, and that “adverse modification of critical habitat” would include any actions that reduce the effluent flow in the river. It is also possible that suitable habitat could develop within the current effluent-dominated Santa Cruz River and ultimately be occupied by willow flycatchers. If this should occur, then it is possible that any actions that reduce flow in the river could be construed as “take.” It is possible that a Safe Harbor Agreement could be developed for the effluent-dominated portion of the river currently owned by City of Tucson. This would protect the City from liability for take if the City in the future reduces the effluent flow to the River.

The Draft Recovery Plan for this species provides a narrative outline of recovery actions and a list of entities “responsible” for each action. City of Tucson is listed as one of the responsible entities for the following Priority 1 actions: (1) provide (re-establish) instream flows; (2) expand river channels, flow zones, and connectivity; (3) restore ground water, base flows, and flooding; and (4) develop exotic species management plans. City of Tucson is also listed as one of the responsible entities for urban wastewater outfall and rural irrigation tail waters for habitat restoration, a Priority 2 action. City of Tucson was not informed of these “responsibilities” prior to the issuance of the Draft Recovery Plan.

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<sup>15</sup> U.S. Fish and Wildlife Service. 2001. Draft recovery plan southwestern willow flycatcher (*Empidonax traillii extimus*). Southwestern Willow Flycatcher Recovery Team Technical Subgroup, Albuquerque, New Mexico.

### 3.1.6 Yellow-billed Cuckoo

Yellow-billed cuckoo is found only in riparian areas with large trees, generally cottonwoods or willows. It has been sighted in recent years, almost certainly as a migrant, in dense willow thickets along the effluent-dominated portion of the Santa Cruz River drainage near Tucson. There are no nest records near Tucson in many years, though it is present as a nesting species upstream at Tubac.<sup>16</sup> It is unlikely that Parcels 1 and 2A have trees and riparian patches of sufficient size to provide nesting habitat for this species; however, such habitat could develop if vegetation were allowed or encouraged to mature. Annual surveys, mapping of known locations (if any), and development of a management plan for suitable habitat may be desirable future actions. This species is not currently listed as threatened or endangered, but is a candidate for listing and has been classified as “Warranted but Precluded by other Listing Priorities” with a priority of 6.<sup>17</sup> There are over 200 candidate species with higher priorities for listing. Since October 30, 2001, the USFWS has completed final listing rules for six species and proposed listing actions for ten species. This suggests that the yellow-billed cuckoo is not likely to be listed as threatened or endangered in the next five to ten years, unless there is a lawsuit demanding earlier listing<sup>18</sup>. Under the worst-case scenario, it is possible that the cuckoo could be listed as endangered, that it could have critical habitat designated to include the Santa Cruz River, and that “take” and/or “adverse modification of critical habitat” could include any actions that reduce the effluent flow in the river.

## 3.2 OTHER SPECIAL INTEREST SPECIES (NOT FEDERALLY LISTED)

### 3.2.1 Tumamoc Globeberry

Tumamoc globeberry is a perennial plant that lives as a large tuberous root with no visible growth above ground for most of the year. It grows rapidly during the summer rainy season, sending vines up and through supporting plants, such as mesquite trees. It was formerly listed as an endangered species by the USFWS, but was removed from the list when it was discovered to be more abundant and widespread than was thought at the time of listing. It is considered a PVS under the SDCP, but Priority Conservation Areas were not mapped for this species. It may be reconsidered for listing by the USFWS because populations in Mexico appear to be threatened by encroachment of non-native buffelgrass (*Pennisetum ciliare*). It is known from the Avra Valley but is not known specifically from City-owned lands. Surveys for this species follow a protocol that requires they be done during a brief period of time (August and

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<sup>16</sup> Corman, T.E. and R.T. Magill. 2000. Western yellow-billed cuckoo in Arizona: 1998 and 1999 survey report. Nongame and Endangered Wildlife Program Technical Report 1250. Arizona Game and Fish Department, Phoenix, Arizona.

<sup>17</sup> U.S. Fish and Wildlife Service. 2002. Endangered and Threatened Wildlife and Plants; Review of Species That Are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Recycled Petitions; Annual Description of Progress on Listing Actions. Federal Register 67:40657-40679.

<sup>18</sup> According to a press release from the Center for Biological Diversity: “Species on the warranted-but-precluded list receive no legal protection. Nor is there any limit on how long a species may be left on the list. Of the 24 species currently on the warranted-but-precluded list, the average length of time since they were petitioned for listing is 10 years, including a 19 year delay for the sheath-tailed bat, a 15 year delay for six New Mexico springsnails, and 12 year delays for the Columbia and Oregon spotted frogs.”



September). The field reconnaissance for this report did not occur during this time period. Therefore, it is not possible to state with certainty that this species occurs on any of the City-owned parcels. When this species was listed as endangered, the Central Arizona Project was undergoing planning and construction. Many individual plants were found along the CAP right-of-way, and moved to mitigation areas close to parcels 19, 20, and 21. It is possible that there may be some mitigation opportunities, including creating a mitigation bank, for this species on these or other parcels in the Avra Valley.

### **3.2.2 Thornber's Nipple Cactus**

This cactus is known to occur in the Avra Valley. It is small, often found growing under or close to shrubs. It is not easy to distinguish from other similar, closely related, common cacti. There are no known threats to this species, and it is not listed as a special interest species by any agency except the Arizona Department of Agriculture, which lists it as a Salvage Restricted species. The Heritage Data Management System tracks it because it is Salvage Restricted. It was not identified during field reconnaissance for this report, but it was not the object of species-specific searches. If construction activities are planned for City-owned lands that are relatively undisturbed, compliance with the specific terms of the State and local plant preservation ordinances is desirable, and would result in some measure of protection for this species.

### **3.2.3 Lowland Leopard Frog**

Lowland leopard frog is not currently known to occur in the Avra Valley or the Santa Cruz River. The published Priority Conservation Areas report of the SDCP did not identify any land in the Avra Valley as important for this species. However, the online version of Priority Conservation Areas includes a significant part of the Avra Valley along Brawley Wash, as well as the Santa Cruz River as important for this species (Figure 4). It is designated as a Tier 24 category, which is not defined in the report. It is possible that this designation is an error, or that it means the area should be considered as either Tier 2 (Sites that would be of value to the reserve system) or Tier 4 (Areas with potential for restoration or enhancement). Under current conditions, there is no suitable habitat for this species on any City-owned parcel in the Avra Valley. It is possible that habitat suitable for this species could be created on those parcels that have water available.

### **3.2.4 Desert Tortoise**

Desert tortoise is likely to occur on some of the Avra Valley lands, especially parcels 15, 22, 23, 24, and 25. These parcels include some relatively undisturbed land close to rocky hills, which is more typical habitat for this species than is valley land. The Sonoran Desert population of this species is subject to few threats, although construction activities, livestock grazing, off-road vehicle activity, and illegal collecting may directly affect individuals and local populations. The Arizona Game and Fish Department has prepared a management plan for this species, with specific suggestions and guidelines for dealing with

tortoises encountered during construction activities.<sup>19</sup> Surveys for this species and mitigation for take are not required by any agency.

### **3.2.5 Tucson Shovel-nosed Snake**

This snake possibly may occur on undisturbed portions of some of the Avra Valley lands. Even small areas may be appropriate habitat for this species if there is some undisturbed native vegetation and sandy soil. The SDCP identifies several parcels as being within Priority Conservation Areas for this species (Figure 4). These include parcels 8, 9, 10, 11, 12, 18, 19A, 19B, 20, 21, which are included in Tier 2 (areas that would be of value to the reserve system). Parcels 1, 2A, 2B, 3, 4, 5, 6, 7 are included in Tier 14, which is not defined in the SDCP report, but is presumed to mean areas with populations that must be within the reserve system interspersed with areas with the potential for restoration or enhancement. Surveys for this species and mitigation for take are not required by any agency.

### **3.2.6 Ground Snake**

Ground snake possibly may occur on parcels that have some undisturbed native soil and vegetation. The SDCP identifies parcels 1, 2A, 2B, 3, 4, and 5 as being in Priority Conservation Areas, Tier 14 (presumed to mean areas with populations that must be within the reserve system interspersed with areas with the potential for restoration or enhancement) (Figure 4).

### **3.2.7 Red-backed Whiptail**

This lizard is recorded primarily from rocky slopes with mountain scrub vegetation and desert grasslands with junipers and other scrubby trees.<sup>20</sup> However, an area that includes Parcel 15 has been designated as Priority Conservation Area, Tier 2 for this species (Figure 4). Though it is possible that this species might occur on Parcel 15, its presence is considered unlikely because the parcel is flat and lacks the habitat characteristics typical of areas known to support this lizard. The parcel is separated from potentially suitable habitat by a low-density residential area with roads and introduced predators such as cats and dogs, and cleared areas for houses and horse corrals.

### **3.2.8 Giant Spotted Whiptail**

Giant spotted whiptail is a large lizard that possibly may occur along Brawley Wash. Surveys for this species have not been conducted, and the species is not easily observed without careful searching. It has recently been found along the West Branch of the Santa Cruz River, in a narrow strip of dense mesquite bordered by inactive agricultural fields. The distribution of this species is not well known, so it may occur on some of the City-owned properties with dense mesquite, such as parcels 2B, 4, 9, 12, 18, 21, 24, and 25. It is possible also on parcels 1, 2A, and 5 along the Santa Cruz River. This species is threatened

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<sup>19</sup> Arizona Interagency Desert Tortoise Team. 1996. Murray, R.C., and V. Dickinson (eds.). Management plan for the Sonoran Desert population of the desert tortoise in Arizona. Arizona Interagency Desert Tortoise Team. 55pp.

<sup>20</sup> Sonoran Desert Conservation Plan. 2001. Priority Vulnerable Species.

by loss of dense riparian (including xeroriparian) vegetation. Management measures that can protect such vegetation may benefit the lizard. Surveys for this species, and mapping any populations on City-owned land may be considered desirable actions, as well as management actions that will help ensure protection of riparian areas.

### **3.2.9 Desert Box Turtle**

This terrestrial turtle is usually found in grasslands or riparian areas. Pima County is the western-most locality of the species, and populations here are scattered and not well known. Vegetation that appears somewhat similar to that in which this species has been found is present on some of the Avra Valley lands, particularly parcels 24 and 25. Surveys for this species on these parcels may be considered appropriate actions. No specific management actions are considered necessary or appropriate, other than protection of the land from severe grazing. It is possible that controlled burns may benefit this species.

### **3.2.10 Tropical Kingbird**

Tropical kingbird has been reported to be present occasionally in the general area of the Avra Valley lands along the Santa Cruz River. Actions that protect and/or encourage the growth of large riparian trees would benefit these birds.

### **3.2.11 Burrowing Owl**

This small owl lives in burrows and feeds on rodents, birds, and arthropods. It is most often associated with fallow agricultural fields. It is recorded as breeding at several locations in the Avra Valley.<sup>21</sup> It has been reported to occur on Parcel 1, and is likely to occur on other parcels, but was not observed during field reconnaissance. It prefers open, usually disturbed areas that are largely devoid of vegetation. No specific management recommendations are appropriate, except to document and protect nests from direct disturbance if any are present. There has been some success with creating artificial nest burrows in some localities in which burrows are a limiting factor, and this approach may be desirable on some City-owned lands. Most of the Avra Valley lands are within the area designated as Priority Conservation Area, Tier 1 (areas with populations that must be within the reserve system) for this species (Figure 4).

### **3.2.12 Rufous-winged Sparrow**

Rufous-winged sparrow is a small bird that inhabits a variety of habitats, generally characterized by spiny shrubs or trees and dense native grasses. Much of the Avra Valley appears to be suitable habitat for this bird, and it has been reported nesting in the area.<sup>22</sup> Parcels 23, 24, and 25 are at least partly within the Priority Conservation Area, Tier 1 for this species (Figure 4). Heavy livestock grazing is thought to have temporarily extirpated this species from Arizona, but the sparrow has returned and its populations have increased in recent years. No specific management actions are considered necessary or appropriate, other

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<sup>21</sup> Arizona Breeding Bird Atlas records.

<sup>22</sup> *Ibid.*

than protection of the land from severe grazing. It is possible that controlled burns may benefit this species, if done outside the nesting period, which is the summer rainy season.

### **3.2.13 Abert's Towhee and Bell's Vireo**

These small birds are typically found in dense riparian vegetation. They are known to occur along the Santa Cruz River and along washes and in dense mesquite patches on some of the Avra Valley lands. The Priority Conservation Areas for Abert's towhee include portions of parcels 1, 2A, and 5 (Figure 4). Protection of habitat from direct disturbance is the only appropriate management action that is likely to benefit either of these species.

### **3.2.14 Swainson's Hawk**

Swainson's hawk is a large hawk that occurs in areas of open grassland and desertscrub habitat similar to that occurring in the Avra Valley.<sup>23</sup> Parcels 23, 24, and 25 are at least partly within the Priority Conservation Area, Tier 1 for this species (Figure 4). No specific management actions are appropriate, although this species may benefit from controlled burns and grazing management.

### **3.2.15 Bats**

Several bat species may occur on the Avra Valley lands, but no records are available and apparently no systematic surveys for bats have been conducted in the Avra Valley. There are no caves, mines, or other potentially suitable roost sites for bats that use such sites on any of the City-owned parcels. There is little or no food in the form of saguaros or agaves for nectar and pollen feeding bats, such as lesser long-nosed bat and Mexican long-tongued bat on any of the parcels. However, part of Parcel 25 is within the area designated as a Priority Conservation Area, Tier 2 for lesser long-nosed bat. Also, part of parcels 21 and 23 are PCA Tier 2 for pale Townsend's big-eared bat (Figure 4). Neither species is likely to occur on any of these parcels because resources necessary for these species are not present. Western yellow bat and western red bat may occur along the Santa Cruz River in areas with large riparian trees (Parcel 1). Protection of the trees is the only appropriate management action.

## **4.0 THE SDCP AND THE AVRA VALLEY LANDS**

The Avra Valley lands are included within the geographic area encompassed by the draft SDCP. Figure 5 shows the designated SDCP conservation categories of the lands within the Avra Valley. Portions of parcels 2A, 10, 11, 21, 23, and 24 are classified as Biological Core because they contain either recorded instances of several Potentially Vulnerable Species (PVS), habitat characteristics that indicate high probability of occurrence of several PVS, special elements of conservation concern (Figure 6), or have been delineated as Priority Conservation Areas for one or more PVS (Figure 4). Important Riparian Areas are also indicated as occurring on parcels 1, 2A, 4, 5, 8, 9, 11, 12, 16, 17, 18, 21, 23, 24, 25, and 26. Most of these are part of the Brawley Wash corridor, within the designated floodplain, and have dense mesquites. The SDCP puts a high value on conservation of these areas. Some of the Avra Valley lands

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<sup>23</sup> *Ibid.*

are categorized as Multiple Use, and some as Recovery Area, because of their former designation as critical habitat for cactus ferruginous pygmy-owl or current designation in the Draft Recovery Plan (January 2003 version) as a Recovery Area or Special Management Area for cactus ferruginous pygmy-owl. Changes in the most recent version of the Draft Recovery Plan may eventually result in changes in designation of lands, with removal of some parcels and addition of others to the Recovery Area category. Because of their apparent high conservation value, some of the Avra Valley lands may provide opportunities for collaboration and negotiation with Pima County.

In September, 2002, Pima County Supervisors approved the purchase of property adjacent to City-owned Parcel 25 for conservation purposes. Advocates of the purchase touted the conservation value of this parcel to several species of PVS. This was largely inaccurate, in our opinion, as the parcel does not appear to be of conservation value for most of the species the County alleged would benefit. However, County acquisition of this property may present opportunities and constraints for City management of its adjacent parcel. Depending on City goals for the management of Parcel 25, and possibly other parcels in the Avra Valley, the City may wish to consider sale (or donation?) of Parcel 25 and other Parcels (e.g., Parcel 24, part of Parcel 23) to the County for conservation lands, while the City retains water rights and any active wells. This might ensure that the City's interests are maintained by the City, result in income from these properties, and demonstrate City cooperation with the County's SDCP. If necessary, the same case that the County made for conservation importance of their new purchase could be made for these City parcels, although the City might wish to make somewhat more accurate statements than those made by advocates of the County purchase.

Priority Conservation Areas (PCAs) were delineated by a team of experts on each Priority Vulnerable Species listed in the SDCP.<sup>24</sup> PCAs for these species were identified based on the following six tiers:

1. Areas that contain populations that must be included in the reserve system;
2. Areas that would be of value to the reserve system;
3. Areas that represent critical landscape linkages;
4. Areas that have the potential for restoration or enhancement;
5. Areas that need not be in the reserve; and
6. Areas that should not be in the reserve based on fragmentation, isolation, or degradation.

Species for which PCAs encompass City-owned properties in the Avra Valley are listed in Table 2. They are distinguished as either federally listed or other (not federally listed). Figure 4 shows the Avra Valley lands that are included within Priority Conservation Areas.

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<sup>24</sup> Priority Conservation Areas. Report issued as part of the Sonoran Desert Conservation Plan. May 2001.

Figure 6. The Avra Valley Lands with “Special Elements” from SDCP (Source: Pima County, 2002)



Table 2. Species with Priority Conservation Areas in the Avra Valley

<b>Federally Listed Species</b>	<b>Tier</b>	<b>Parcels</b>
Huachuca water umbel	4	1, 2A, 5
cactus ferruginous pygmy-owl	23	2B, 3, 4, 6, 8, 9, 10, 11, 12, 18, 19A, 19B, 20, 21, 23, 24, 25
lesser long-nosed bat	2	25
<b>Other Species (Not Federally Listed)</b>		
lowland leopard frog	24	1, 2A, 2B, 3, 4, 5, 6, 8, 9, 10, 11, 12, 18, 19A, 19B, 20, 21, 23, 24, 25
ground snake	14	1, 2A, 2B, 3, 4, 5
redbacked whiptail	2	15
Tucson shovelnosed snake	14	1, 2A, 2B, 3, 4, 5, 6, 7
	2	8,9,10,11,12,18,19A, 19B, 20, 21
Abert's towhee	1	1, 2A, 5
rufous-winged sparrow	1	23, 24, 25
Swainson's hawk	1	23, 24, 25
western burrowing owl	1	All but 24 and 25
pale Townsend's big-eared bat	2	2, 23



## 5.0 EXPOSURE UNDER THE ESA AND MITIGATION OPPORTUNITIES

The potential for exposure to “take” or “adverse modification of critical habitat” under the ESA, and the possibilities for use of the Avra Valley lands as mitigation for City actions that may affect federally listed species are important considerations of this report. The USFWS has no precedent for accepting actions that may benefit one species as mitigation for actions that may harm another species, and the USFWS has not published a mitigation policy for off-site mitigation for Threatened and Endangered (T&E) species. However, in practice, the USFWS has allowed or directed off-site mitigation for take of some T&E species and adverse modification of critical habitat. As a general rule, off-site mitigation has been permitted, at the discretion of the USFWS, but has been limited to areas that are within the same watershed as the action area or otherwise clearly connected to the action area (such as Recovery Area or Critical Habitat Area for a T&E species).

The majority of City-owned properties in Tucson and the Avra Valley are within the Santa Cruz River watershed. In the Avra Valley, City-owned properties are within the Brawley Wash watershed, which is a tributary of the Santa Cruz River. Consequently, most (if not all) future City actions, in both Tucson and the Avra Valley, will continue to occur within the Santa Cruz River watershed. It is therefore possible that conservation actions on City-owned lands in the Avra Valley might be construed as appropriate mitigation for City actions elsewhere within the Santa Cruz River watershed. Parcels most likely to be desirable for conservation actions would be those crossed by the Santa Cruz River (parcels 1, 2A, and 5), and those crossed by Brawley Wash that have substantial stands of mesquites (parcels 4, 9, 11, 12, 18, 21, 23, 24, and 25). These parcels provide an opportunity to protect an almost continuous wash system with a corridor of xeroriparian vegetation connecting the Altar Valley and Buenos Aires National Wildlife Refuge to the Santa Cruz River, although under current Federal, County, and City policies, ordinances, and laws, the majority of the wash system is already fairly well protected from development-related encroachment.

Under the former critical habitat designation for the cactus ferruginous pygmy-owl, the City was directed by the USFWS to perform specific conservation actions as mitigation for the development of the Clearwater Project. In the absence of critical habitat, such mitigation would not have been required. It is highly unlikely that owls are actually nesting or otherwise using any City-owned land in the Avra Valley, and therefore unlikely that actual “take” would occur as a result of any City actions. In the absence of critical habitat, following the “Project Clearance Protocol” (i.e. survey protocol) provided by the USFWS for this species would likely be sufficient to protect the City from ESA exposure. The new proposed critical habitat designation for this species will almost certainly have implications for the management of the City-owned properties in the Avra Valley, if it becomes final. The Recovery Plan for this species, though not final, has been used to direct mitigation and management of lands within Special Management Areas and Recovery Areas. The legality of this is debatable, but, until that is resolved, the Recovery Plan should be considered in making decisions that involve any projects on parcels that are within these designated areas, specifically parcels 21, 23, 24, and 25. When and if the Recovery Plan becomes final, it will not have the force of law, but may influence Federal policy. If the listing of the owl is overturned

based on the recent Ninth Circuit Court of Appeals decision, then critical habitat and the Recovery Plan will no longer be considerations.

With regard to the Pima pineapple cactus, the City appears to have limited ESA exposure and mitigation opportunities in the Avra Valley. The potential for creating a mitigation bank, for example, appears unlikely. City-owned lands are on the edge of the currently known range of this species, and do not appear to support substantial populations of this species. It is possible that some cacti are present, and surveys before construction probably should probably be conducted on parcels 24, 25, and 26.

The City purchased the Avra Valley properties for their water rights, and water is almost certainly the most valuable commodity these lands have to offer for mitigation. Depending on specific circumstances and conditions, it is possible that the City might be able to use water as leverage in negotiating conservation actions with County and Federal agencies. Possibilities include creating and maintaining wetland and riparian habitats for water-dependent (e.g., native fish and frogs) and riparian-dependent species (e.g., southwestern willow flycatcher and yellow-billed cuckoo). The most likely sites for conservation actions utilizing water would be those properties along the Santa Cruz River (parcels 1, 2A, 5). However, other properties, particularly those encompassing major reaches of Brawley Wash, also have mitigation potential, but the exportation of water to create wetlands where none have existed previously should be carefully planned, negotiated, and tied to specific assurances and commitments from partner agencies before the City commits water or funds to such activities.



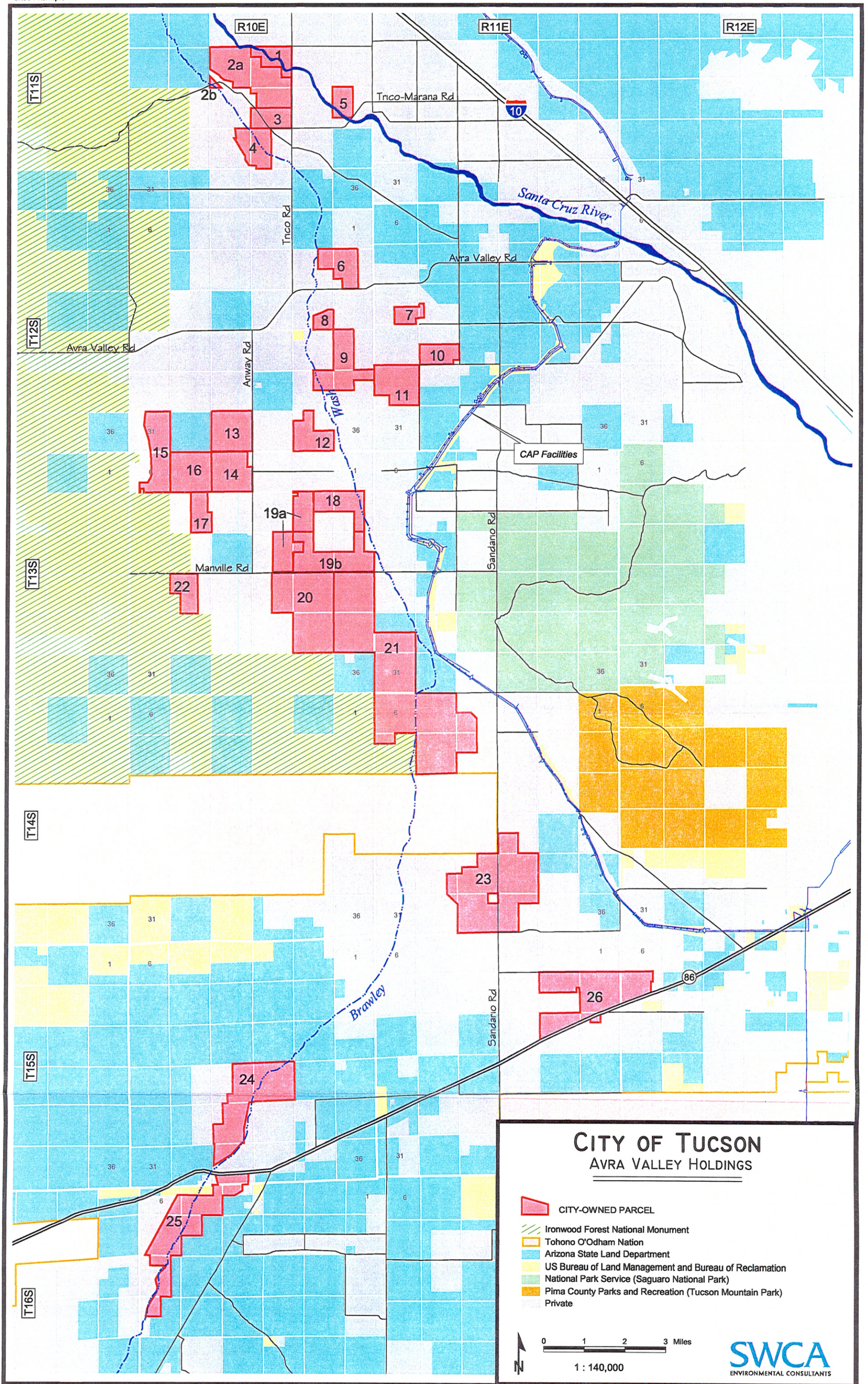


Figure 1. Locations of City of Tucson Avra Valley lands and neighboring land ownership (source: ASLD, 2001).



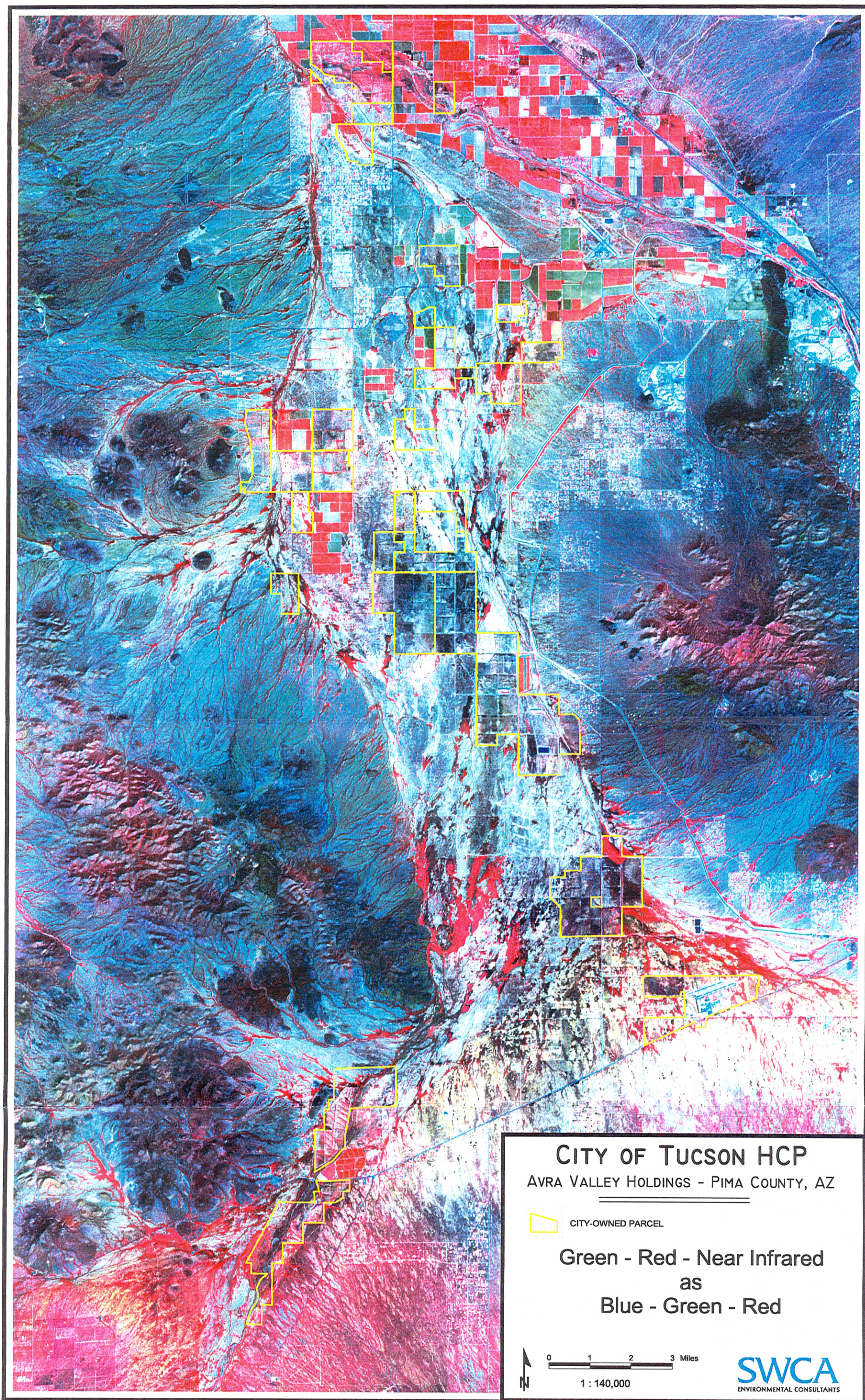


Figure 2. Satellite image of Avra Valley showing city-owned parcels.



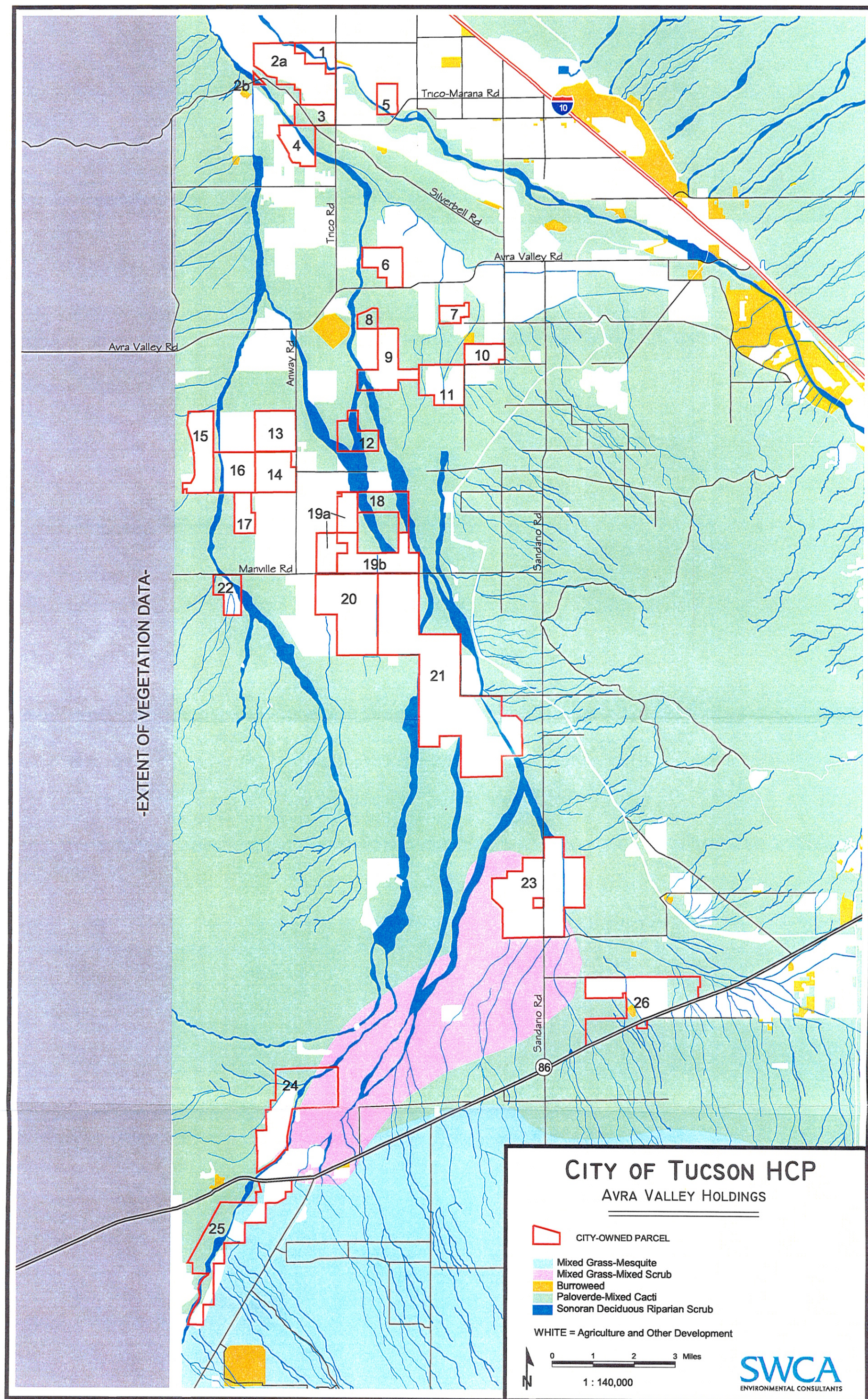


Figure 3. Vegetation communities in Avra Valley (source: Pima County & University of Arizona, 1998).



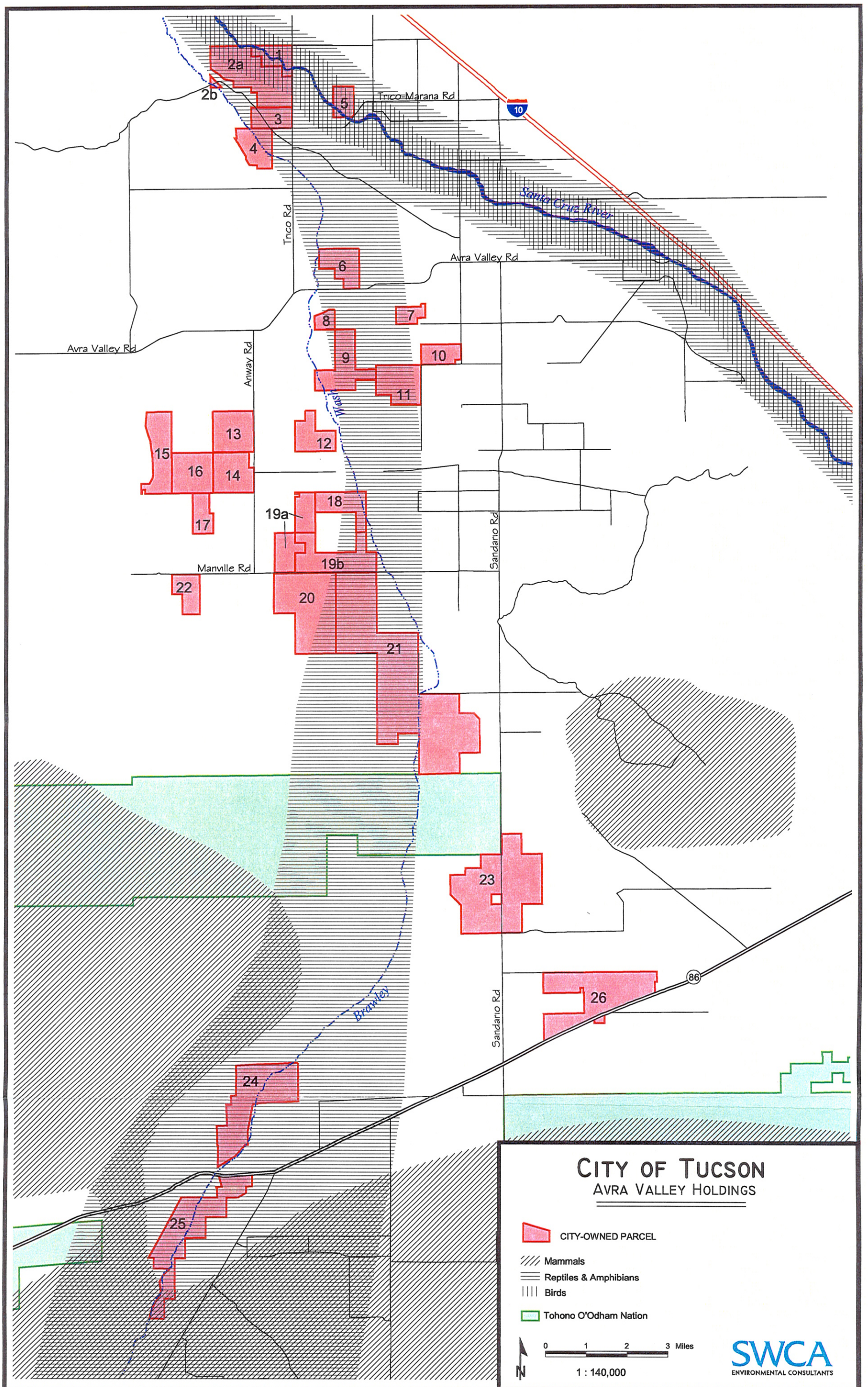


Figure 4. The Avra Valley lands with "Priority Conservation Areas" by species groupings from SDCP (source: Pima County, 2002).



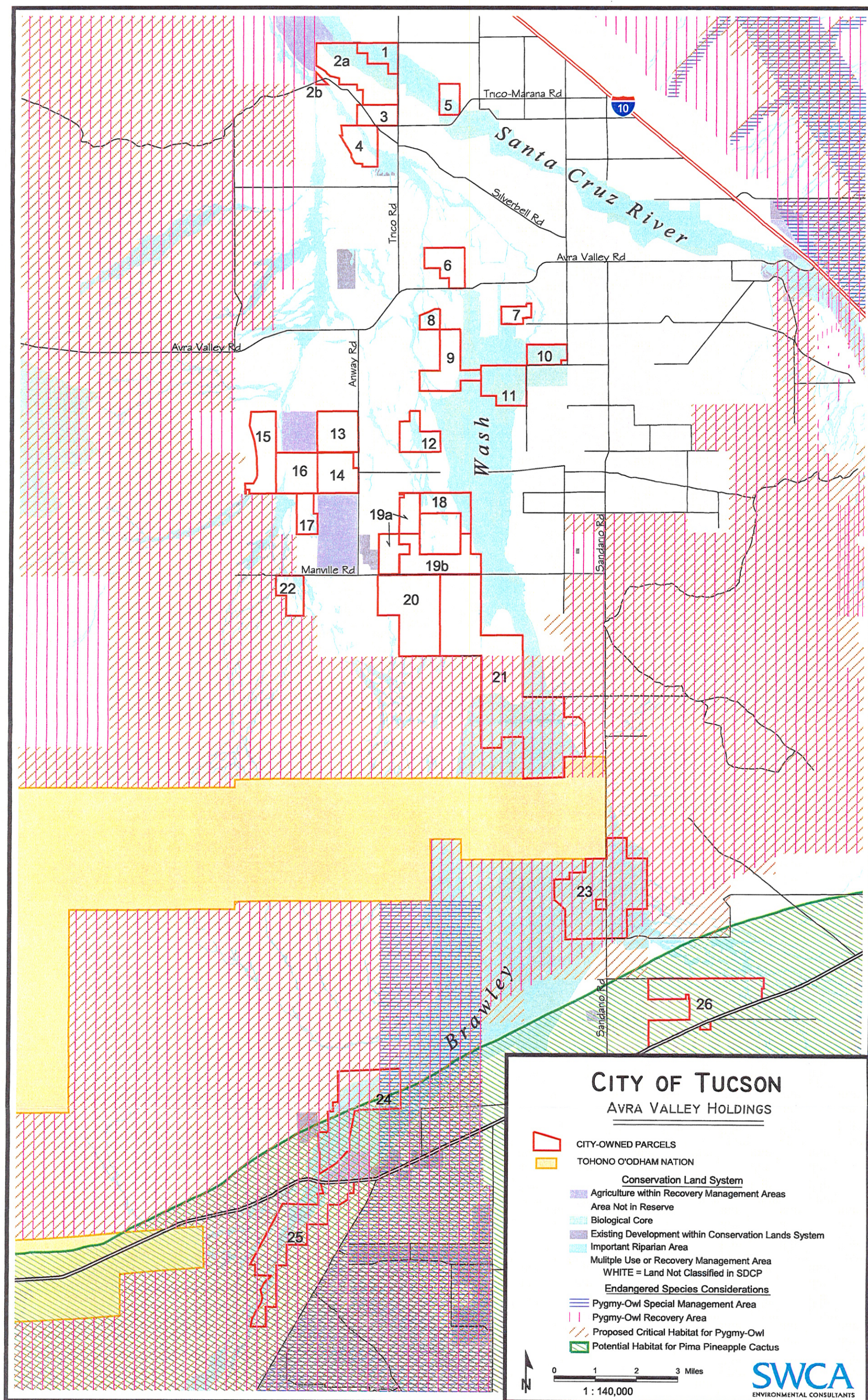


Figure 5. The Avra Valley Lands with proposed "Conservation Land System" from SDCP and endangered species considerations (sources: Pima County, 2002 and USFWS, 2002).



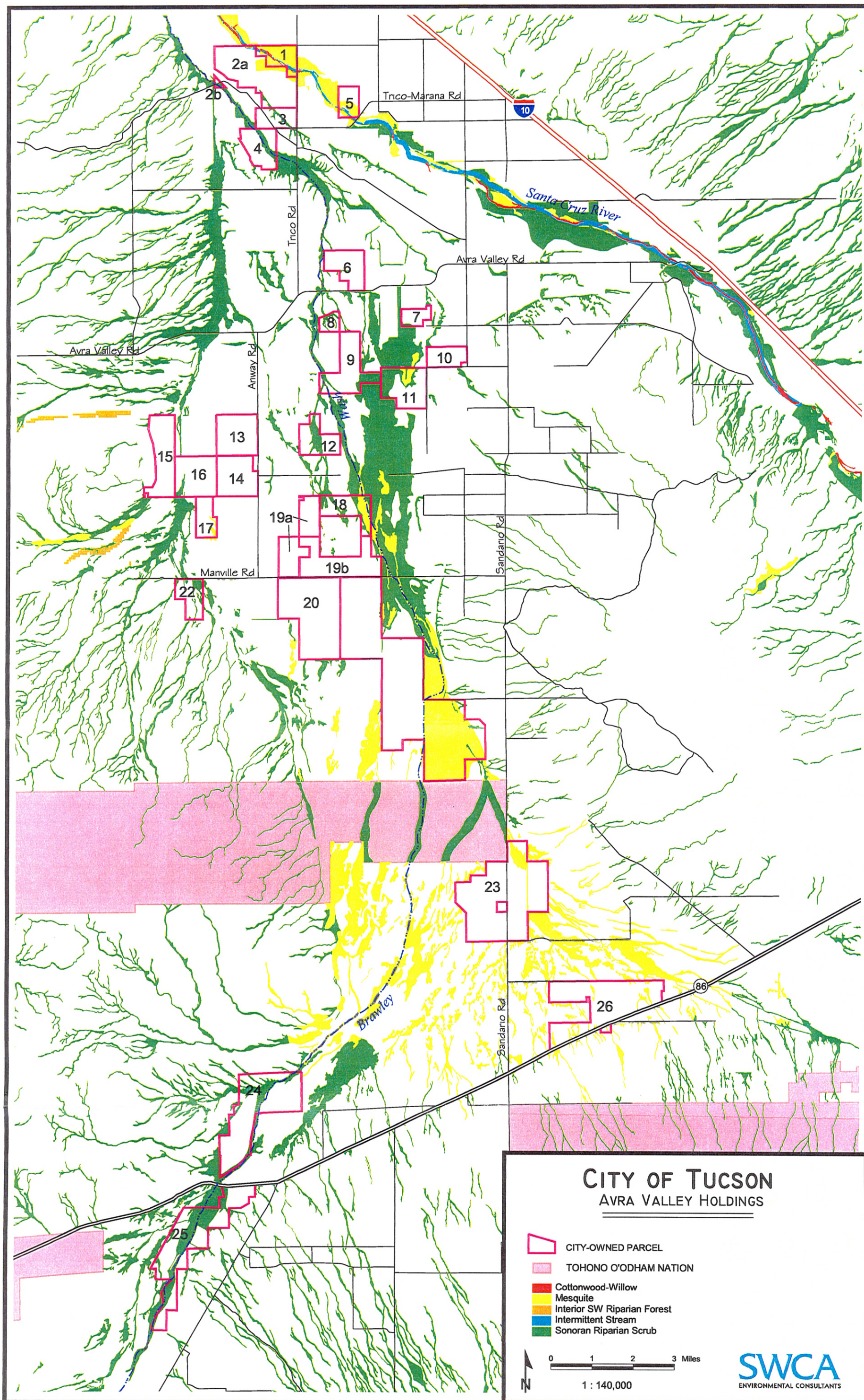


Figure 6. The Avra Valley lands with "Special Elements" from SDCP (source: Pima County, 2002).



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**APPENDIX A**  
**PARCEL DESCRIPTIONS**

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## INTRODUCTION

The following parcel summaries provide detailed information regarding conditions that may influence the presence of species of concern and potential mitigation opportunities. For each parcel, information is included from the following prior reports and planning documents:

- City of Tucson Planning Department. 1996. Avra Valley Land Use Study for City of Tucson Property Holdings. Figure 5. (This document includes mapped land uses and general vegetation. Based on our site visits, some of the vegetation types appear to have been inaccurately assigned, possibly as a result of the scale of the mapping effort or changes in vegetation conditions. These vegetation types were eliminated from the Mapped Land Uses on some parcel descriptions).
- Shaw, W.W., J.M. Burns, and K. Stenberg. 1986. Wildlife habitats in Tucson: a strategy for conservation. School of Renewable Natural Resources, Univ. of Arizona, Tucson, Ariz. 17 pp. See also maps
- U.S. Fish and Wildlife Service. 2002. Cactus ferruginous pygmy-owl (*Glaucidium brasilianus cactorum*) Draft Recovery Plan. Albuquerque, NM. 169 pp.
- Ecosphere Environmental Services, Inc. 1992. A range study of *Coryphantha scheeri* var. *robustispina*. Final Report. Prepared for U.S. Bureau of Reclamation, Arizona Projects Office, Phoenix, Arizona.
- SWCA, Inc. 1995. Natural Riparian Habitat Inventory. The Tucson Stormwater Management Study, Phase II, Stormwater Master Plan. Report submitted to Simons, Li & Associates.
- Preliminary Sonoran Desert Conservation Plan, online edition of maps at <http://www.dot.co.pima.az.us/cmo/sdcpmaps/>. This includes the Harris Riparian Vegetation map.



**Parcel 1**

**Name:** Simpson Farm North

**Legal Description:** T11S R10E, Section 15, portions of the north and east ½

**Purchase Date:** Before 1980

**Total Acreage:** 324

Undisturbed Acreage: 26

Disturbed Acreage: 298 (Irrigated Acreage: 132)

**Adjacent Land Ownership and Condition:** Land to the north is currently farmed. To the east is active agriculture and retired agricultural land, to the south and west is a large parcel of retired agricultural land owned by the City of Tucson (Parcel 2—Santa Cruz Farm).

**Edaphic Conditions:** Approximate elevation range is 1890 to 1900 feet. Soils are deep alluvial, generally sandy or gravelly in structure. The effluent-dominated Santa Cruz River runs across the parcel for approximately 1.2 miles. Water is not permanent, consistent, or assured at this site, but is present in sufficient amount to support a well-developed riparian community of plants and animals. No other permanent or ephemeral water sources are present. Several ditches and flood control structures (berms) are present and affect drainage and water flow across the parcel. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space River, Agricultural Land Out of Production

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space River	224.53 Cottonwood-willow	Fremont cottonwood-Goodding willow	8	2
	234.7 Sonoran Deciduous Riparian Scrub	Burro brush	19	6
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	297	92

**General Condition:** This parcel is managed by Tucson Audubon Society and is being used as a model of habitat restoration methods. Approximately 70 acres have received one form of treatment or another. Among the restoration methods attempted to date are seeding of native plants, water harvesting, and removal of non-native plants. Drought conditions have prevailed over the past several years, and have limited growth of plants in restoration areas.

#### **Suitability for Special-interest Species:**

Designations: This parcel is not within former designated critical habitat for CFPO and it is not within a Recovery Area. It is entirely outside of the currently known range of PPC. The parcel is bisected by the Santa Cruz River, which flows southeast to northwest. Segments on the parcel are considered "Class I or Class II Wildlife Habitat" according to Shaw et al. The entire parcel is classified as "Important Riparian Area" or "Biological Core" in the draft SDCP.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Abert's towhee	1
Burrowing owl	1
Huachuca water umbel	4
Ground snake	14
Tucson shovelnosed snake	14

It is possible that CFPOs might use the Santa Cruz River as a movement corridor. Also, there is some potential for use by yellow-billed cuckoo and southwestern willow flycatcher. This presents an opportunity for mitigation.

Observations: The parcel was visited on 10 April 2002 by an SWCA senior scientist. Most of the land is still clearly disturbed retired agricultural land. The riparian area includes cottonwood-willow vegetation.

**Conclusion:** This parcel does not currently provide suitable nesting or permanent habitat for any Federal listed threatened or endangered species. The parcel does, however, have potential mitigation value as a dispersal corridor for CFPO, as well as long-term potential for nesting and/or as a migration corridor for yellow-billed cuckoo and southwestern willow flycatcher. Although this parcel is designated in the SDCP as "Important Riparian Habitat" and "Biological Core," those designations are not based on current conditions on most of the site, but on potential future conditions and variables used in creating models of the potential distribution of several species. Bell's vireos and Abert's towhees are known to inhabit this parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known from the property at this time. It is possible that this parcel might be restored to provide suitable habitat for the lowland leopard frog, several native fish species, Huachuca water umbel, and other species if those species were to be reintroduced. It is also possible that some of the birds and bats considered Priority Vulnerable Species may eventually become established on the parcel as habitat conditions improve. Because of the presence of effluent water, riparian vegetation has developed along the river. Removal or reduction of the effluent would, undoubtedly, adversely affect the riparian community. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 2A

**Name:** Santa Cruz Farm

**Legal Description:** T11S R10E, most of Section 16, approximately ½ of Section 15, north ½ of section 22.

**Purchase Date:** After 1980

**Total Acreage:** 1,158

Undisturbed Acreage: 0

Disturbed Acreage: 1,158 (Irrigated Acreage: 910)

**Adjacent Land Ownership and Condition:** Land to the north is currently farmed private land (west half of parcel) or retired agricultural land owned by the City of Tucson (Parcel 1—Simpson Farm). To the east is a portion of Simpson Farm and active agriculture on private land. To the south is low-density residential development on private land, mostly double-wide mobile homes, and retired agricultural land owned by the City of Tucson (Parcel 3—Santa Cruz Farm). To the west is low density residential development on private land, and active agriculture on State land.

**Edaphic Conditions:** Approximate elevation range is 1890 to 1910 feet. Soils are deep alluvial consisting of gravelly sandy loam, sandy loam, loamy sand and silty clay loam. The land is generally flat, except where it has been bermed or excavated. There is no permanent surface water available on the property, and no riparian vegetation. The effluent dominated Santa Cruz River crosses a very small portion of the north boundary of this parcel, but water is not perennial at this point. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production.

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle, grasses and forbs	1,158	100

The Harris Riparian Vegetation map shows the presence of riparian vegetation on this site, in the extreme northeastern corner of Section 16. The map indicates that the riparian vegetation consists of the following:

234.700 Sonoran Deciduous Riparian Scrub  
224.5300 Cottonwood-willow  
224.52 Mesquite  
154.1000 Sonoran Desertscrub

This appears to be a mapping error, as the portion of the parcel indicated does not have this type of vegetation, but appears to be almost totally devoid of trees. However, the area in question was not visited during field reconnaissance because access was difficult.

**General Condition:** This parcel has been entirely disturbed by agricultural activities, earth moving, and flooding. Vegetation is sparse and consists mostly of non-native weedy species.

**Suitability for Special-interest Species:**

Designations: This parcel is bordered on the west side by a proposed CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The parcel is bisected by Brawley Wash, which is considered "Class I and II Wildlife Habitat." Brawley Wash is an extension of Altar Wash, which originates in the Buenos Aires National Wildlife Refuge, where CFPOs are known to occur. This relationship qualifies the area as Class I Wildlife Habitat, which includes: "Major extensions of desert riparian habitat from the large reserves of public lands surrounding Tucson." The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the upland portions of the parcel are indicated as Multiple Use or Recovery Management Areas (based on the CFPO Recovery Area designation, December 2000 version of the Draft Recovery Plan), and the xeroriparian areas are indicated as Important Riparian Areas.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Abert's towhee	1
Burrowing owl	1
Huachuca water umbel	4
Ground snake	14
Tucson shovelnosed snake	14

Observations: The parcel was visited on 10 April 2002 by an SWCA senior scientist. The parcel is entirely retired agricultural fields and disturbed ground features, such as berms. There is no well-developed native vegetation present on the parcel, except a few small, highly disturbed patches of Sonoran Desertscrub (creosote bush association) along the southern boundary.

**Conclusion:** This parcel currently provides no potentially suitable habitat for any Federal listed threatened or endangered species. It is possible that the small portion of this parcel that intersects the Santa Cruz River may potentially contribute to a travel corridor for CFPO. That portion may also provide potential habitat for Abert's towhees and Bell's vireos. It is possible that ground snake and Tucson shovelnosed snake may occur on the parcel in the small, undisturbed portions. It is possible that burrowing owl may occur on disturbed portions of the parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are likely to occur on the parcel at this time. This parcel probably has little, if any, mitigation and/or conservation value, except possibly along the river, without significant investment of money and energy toward restoration of native vegetation.



**Parcel 2B****Name:** Unknown**Legal Description:** T11S R10E, the southwest corner of Section 16**Purchase Date:** After 1980**Total Acreage:** 26

Undisturbed Acreage: 26

Disturbed Acreage: 0 (Irrigated Acreage: 0)

**Adjacent Land Ownership and Condition:** This is a small triangular parcel of land on both sides of Silverbell Road. To the north, east, and south is private land, with low density-residential development. To the west is State land that is currently undeveloped.

**Edaphic Conditions:** Approximate elevation is 1890 feet. Soils are deep alluvium consisting of gravelly sandy loam, sandy loam, loamy sand and silty clay loam and sandy wash bottom. The land is generally flat, and is crossed by two branches of Los Robles Wash (a braid of Brawley Wash), which is slightly to deeply incised. Surface flow along the east branch of the wash is blocked by Silverbell Road, and is diverted to the west branch through culverts and under a bridge. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Open Space River.**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.11 Sonoran Desertscrub	Mesquite (as shrub)	18	72
Open Space Undisturbed	224.52 Sonoran Riparian Forest and Woodland	Mesquite (as tree)	7	28

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub. However, the mesquites along the wash appear to be larger than is typical of this classification. Smaller mesquites and several species of shrubs are present on the upland portions of this site.

**General Condition:** This parcel has been undisturbed by agricultural activities. A great deal of trash, mostly typical of that left behind by illegal immigrants, is present on the parcel, especially along the washes and under the bridge.

**Suitability for Special-interest Species:**

Designations: The parcel is adjacent to a proposed CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The parcel is bisected by Brawley Wash, which is considered "Class I and II Wildlife Habitat." Brawley Wash is an extension of Altar Wash, which originates in the Buenos Aires National Wildlife Refuge, where CFPOs are known to occur. This relationship qualifies the area as Class I Wildlife Habitat, which includes: "Major extensions of desert riparian habitat from the large reserves of public lands surrounding Tucson." The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft Sonoran Desert Conservation Plan, upland portions of the parcel are identified in the current version (March 2002) as Multiple Use or Recovery Management Areas (based on the CFPO Recovery Area designation, December 2000 Draft Recovery Plan), and the xeroriparian areas are identified as Important Riparian Areas.

Hypothetical Potential: The SDCP maps portions of this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Ground snake	14
Tucson shovelnosed snake	14

Observations: The parcel was visited on 10 April 2002 by an SWCA senior scientist. This is a small parcel on both sides of Silverbell Road. Trees have been tagged for removal. It appears as though some project is planned, either to widen the road, install a new bridge, or both. Other observations are included under Vegetation and General Condition, above.

**Conclusion:** It is possible that this parcel may currently provide a potential travel corridor for the CFPO. It currently provides habitat suitable for Abert's towhees and Bell's vireos. It is possible that rufous-winged sparrow, California leaf-nosed bat, ground snake and Tucson shovelnosed snake may occur on the parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known from the property at this time. This parcel may have mitigation and/or conservation value. The only specific recommendation for mitigation is to leave intact as much of the native vegetation as possible. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

### Parcel 3

**Name:** Simpson Farm South

**Legal Description:** T11S R10E, Section 22

**Purchase Date:** Before 1980

**Total Acreage:** 314

Undisturbed Acreage: 203

Disturbed Acreage: 111 (Irrigated Acreage: 111)

**Adjacent Land Ownership and Condition:** To the north is Santa Cruz Farm, City of Tucson land, which is retired agricultural land, and private land, which is low-density residential development. To the east is active agricultural land. To the south is undeveloped Sonoran Desertscrub, which is part of the Hurst Farm. City of Tucson land borders the parcel on the west side, and low-density residential land borders the parcel on the east side. To the west is low-density residential development.

**Edaphic Conditions:** The approximate elevation range is 1930 ft in the south-central portion, sloping to 1910 ft in the southwest and northeast corners of the parcel. Soils are deep alluvial that have been farmed. No permanent surface water was detected on the parcel. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production

#### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush	203	65
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Weedy grasses and forbs	111	35

The Harris Riparian Vegetation Map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub

**General Condition:** The westernmost ~60% of the parcel is undisturbed except for dirt roads and Silverbell Road, which bisects the parcel. The remainder of the parcel is retired agricultural land.

### **Suitability for Special-interest Species:**

Designations: This parcel is not within a proposed Recovery Area and is outside the former critical habitat for CFPO. It is entirely outside of the currently known geographic range of PPC. Most of the parcel is designated "Multiple Use" in the draft SDCP, with the exception of the southwest corner, which is designated as "Important Riparian."

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Ground snake	14
Tucson shovelnosed snake	14

Observations: The parcel was visited on April 4, 2002 by an SWCA senior scientist. The parcel appears to have little potential as a movement corridor for CFPO. No saguaros and very few mesquites were observed (some mesquites occur along the western edge of Silverbell Road where water has impounded). Understory vegetation is not well developed.

**Conclusion:** There is little potential mitigation value for CFPO in present condition, and it is unlikely that any species of concern would be present on this parcel.

**Parcel 4****Name:** Hurst Farm**Legal Description:** T11S R10E, most of west ½ of Section 27 and east 1/3 of Section 28**Purchase Date:** Before 1980**Total Acreage:** 466

Undisturbed Acreage: 168

Disturbed Acreage: 298 (Irrigated Acreage: 294)

**Adjacent Land Ownership and Condition:** To the south, east, and west are private lands with low-density residential development. To the north is City of Tucson land (Simpson Farm South, Parcel 3), which is undeveloped immediately north of Parcel 4, and active private agricultural land at the northwest corner.

**Edaphic Conditions:** Approximate elevation range is 1900 to 1930 feet, with the low contour being the floodplain of Los Robles Wash, which transects the eastern portion of the parcel from southeast to northwest. Soils are deep alluvial that have been farmed. The land is relatively flat, with a slight downward slope to the north (less than 2%). No permanent surface water was detected on the parcel. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production, Open Space River

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space River	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	52	11
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush	120	26
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	294	63

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub

**General Condition:** The northeasternmost 30% of the parcel is undisturbed except for a couple undeveloped dirt roads and disturbances associated with a former residence. Brawley Wash runs southeast to northwest through the parcel. It was channelized and bermed to protect the agricultural fields

to the west from flooding, and consequently the row of mesquites associated with the wash is only about 100 feet wide. The majority of the western portion of the parcel, perhaps 60%, is retired agricultural land. About 10% of the northern portion was not cultivated, however, and is vegetated with dense mesquite. Water apparently impounds here, further increasing water availability for mesquite growth.

**Suitability for Special-interest Species:**

Designations: The parcel is not within former designated critical habitat for CFPO or a Recovery Area. It is entirely outside the currently known geographic range of PPC. The parcel is bisected by Los Robles Wash, which is considered "Class II Wildlife Habitat" according to Shaw et al. The draft SDCP classifies the wash as "Important Riparian Area" and the remainder of the parcel as "Multiple Use."

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Ground snake	14
Tucson shovelnosed snake	14

Observations: The parcel was visited on April 4, 2002 by an SWCA senior scientist. No saguaros were observed but many mesquites appear to be greater than 6" in diameter at 4.5 ft. above ground level. Understory vegetation is not well developed. It is possible that CFPOs might use the wash as a movement corridor. The mesquite vegetation at the northern end of the parcel is dense. Though Brawley Wash forms a continuous corridor through the parcel, the corridor width is only about 100 ft.

**Conclusion:** Potential mitigation possibility as a travel corridor for CFPO. Protection for an additional segment of the Brawley Wash system. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

**Parcel 5****Name:** Martin Farm**Legal Description:** T11S R10E, NW ¼ and N ½ of SW ¼ of Section 24**Purchase Date:** After 1980.**Total Acreage:** 242

Undisturbed Acreage: 58

Disturbed Acreage: 184 (Irrigated Acreage: 184)

**Adjacent Land Ownership and Condition:** To the north is active agricultural land, to the east is active agricultural and low density residential land, to the south is undeveloped river floodplain owned by Pima County, and to the west is mostly undeveloped river floodplain, with active agriculture at the southwest corner of the parcel.

**Edaphic Conditions:** Approximate elevation range is 1920 to 1930 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. The effluent-dominated Santa Cruz River runs across the parcel for approximately 1/2 mile. The river is deeply incised on this parcel. Water is not permanent, consistent, or assured at this site, but is present in sufficient amount to support a minimally developed riparian community of plants and animals. No other permanent or ephemeral surface water sources are present. Several ditches and flood control structures (berms, damaged bank protection) are present and affect drainage and water flow across the parcel. The entire parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production, Open Space River, Open Space Undisturbed.

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush	10	4
Open Space River	224.52 Mesquite	Mesquite (as tree)	37	15
Open Space River	234.7 Sonoran Deciduous Riparian Scrub	Burro brush	11	5
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	184	76

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 234.700 Sonoran Deciduous Riparian Scrub and 224.52 Mesquite

**General Condition:** Vegetation is in poor condition due to past flooding and continued grazing. Non-native saltcedar and athel tamarisk are present. Large dead mesquites are present in the southwest corner of the property. Vegetation in the fallow fields is impacted by grazing, and shows little recovery from agricultural use. It is weedy and sparse.

**Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The parcel is bisected by the Santa Cruz River, which flows southeast to northwest. Segments on the parcel are considered "Class I or Class II Wildlife Habitat" according to Shaw et al. The south 2/3 of the parcel is classified as "Important Riparian Area" or "Biological Core" in the draft SDCP, and the north 1/3 is not classified.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Abert's towhee	1
Burrowing owl	1
Huachuca water umbel	4
Ground snake	14
Tucson shovelnosed snake	14

Observations: The parcel was visited repeatedly in 2000 and 2001 by K.J. Kingsley, who used it as a site for a study of birds along the lower Santa Cruz River. Abert's towhee and Bell's vireos were observed on the site. It is possible that ground snakes and Tucson shovelnosed snakes may be present in the small, relatively undisturbed southwest corner of the parcel. Although conditions resemble those present in sites known to have burrowing owls, no burrowing owls were observed on this site during 12 visits to it by ornithologists. It is unlikely that any other Priority Vulnerable Species would occur on the parcel under current conditions.

**Conclusion:** Because of the steeply incised condition of the river on this parcel, and the intermittent nature of the water, it is unlikely that vegetation conditions will improve without significant effort. Vegetation conditions are exacerbated by the presence of cattle on the parcel. It is unlikely that CFPO would use the sparse riparian vegetation as a travel corridor unless vegetation density increased.



## Parcel 6

**Name:** Gin Farm

**Legal Description:** T12S R10E, NE ¼ of Section 11 and most of W 2/3 of Section 12

**Purchase Date:** Before 1980

**Total Acreage:** 470

Undisturbed Acreage: 10

Disturbed Acreage: 460 (Irrigated Acreage: 460)

**Adjacent Land Ownership and Condition:** To the north is active agricultural land that is privately owned and undisturbed Sonoran Desertscrub that is State land. To the east is active agricultural land. To the south is private undisturbed Sonoran Desertscrub and very low density residential land. To the west is Brawley Wash, several undeveloped private parcels, and agricultural land.

**Edaphic Conditions:** Approximate elevation range is 1980 to 1990 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. There are no permanent or ephemeral water sources present. Several ditches and flood control structures (berms) are present and affect drainage and water flow across the parcel. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production, Open Space River.

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	10	2
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	460	98

The Harris Riparian Vegetation map shows a small strip of 154.100 Sonoran Desertscrub riparian vegetation along the south boundary of the parcel in Section 11, and in the northwest corner of the parcel in Section 11. Growth of mesquite has been facilitated by berms and raised roads. With the exception of these mesquite areas, the entire parcel is fallow agricultural land with little vegetation growth.

**General Condition:** Vegetation is generally sparse, and consists mostly of weedy species.

### Suitability for Special-interest Species:

**Designations:** This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of

PPC. The northwest corner of the parcel contains some mesquite-dominated xeroriparian vegetation associated with Brawley Wash and a slender strip of the same type of vegetation is created by conditions resulting from a raised road at the south boundary of the parcel in Section 11. The Brawley Wash segment on the parcel is considered "Class I or Class II Wildlife Habitat" according to Shaw et al. In the draft SDCP, the mesquite-dominated vegetation on the parcel is classified as "Important Riparian Area" and the remainder of the parcel as "Multiple Use."

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	14

Observations: The parcel was visited on 16 April 2002 by an SWCA senior scientist. Although conditions resemble those present at sites known to have burrowing owls, no burrowing owls were observed. It is unlikely that any other Priority Vulnerable Species would occur on the parcel under current conditions.

**Conclusion:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value.

**Parcel 7****Name:** Glover Farm**Legal Description:** T12S R11E, SE ¼ of Section 18 and a portion of the SW ¼ of Section 17**Purchase Date:** Before 1980**Total Acreage:** 185

Undisturbed Acreage: 30

Disturbed Acreage: 155 (Irrigated Acreage: 150)

**Adjacent Land Ownership and Condition:** To the north is active agricultural land that is privately owned. To the east is generally disturbed land with native Sonoran Desertscrub vegetation and several bladed roads and other cleared areas. To the south is private land with agricultural buildings, fields, and undisturbed Sonoran Desertscrub. To the west is a large ditch, lined with mesquite, across which is an area of relatively undisturbed Sonoran Desertscrub.

**Edaphic Conditions:** Elevation is approximately 2010 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Several ditches and flood control structures (berms) are present and affect drainage and water flow across the parcel. All of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out Of Production, Open Space Undisturbed.

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	30	17
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	150	83

The Harris Riparian Vegetation map shows an area of 154.1000, Sonoran Desertscrub xeroriparian vegetation at the southwest corner of the parcel. This is largely the result of a raised berm flood control structure that causes ponding of water.

**General Condition:** Vegetation is generally sparse, and generally consists of weedy species.

### **Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. In the draft SDCP, the mesquite-dominated vegetation on the parcel is classified as "Important Riparian Area" and the remainder of the parcel is not classified.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	14

Observations: The parcel was visited on 16 April 2002 by an SWCA senior scientist. Most of the parcel is sparsely vegetated retired farmland.

**Conclusions:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value. Although conditions resemble those present in sites known to have burrowing owls, no burrowing owls were observed. It is possible that Abert's towhees and Bell's vireos might inhabit the areas of dense mesquite on the west side of the parcel, but none were observed. It is unlikely that any other Priority Vulnerable Species besides those mentioned previously would occur on the parcel under current conditions.

## Parcel 8

**Name:** Weinstein Farm

**Legal Description:** T12S R10E, the southwest quarter of Section 14.

**Purchase Date:** Before 1980

**Total Acreage:** 139

Undisturbed Acreage: 0

Disturbed Acreage: 139 (Irrigated Acreage: 72)

**Adjacent Land Ownership and Condition:** All land adjacent to this parcel is privately owned, with the exception of a parcel of City-owned land retired farmland at the southeast corner (Parcel 9). To the north and east is undisturbed land with Sonoran Desertscrub vegetation, separated from this parcel by dirt roads. To the south is active agricultural land. To the west is a branch of Brawley Wash and undisturbed land.

**Edaphic Conditions:** Elevation is approximately 2010 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. A cement-lined ditch is present along the east side of the parcel. Agricultural runoff water from the field to the south drains across this property, mostly into a narrow channel that terminates in a temporary pond. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	67	48
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), Russian thistle	72	52

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub

**General Condition:** It appears that this parcel has been out of agricultural production for a very long time, and it is difficult to determine which portions were irrigated. Part of the parcel that receives runoff from the field to the south has very dense vegetation, including mesquite and desert broom. Essentially the whole parcel has received various types of disturbance historically, but most of it is returning to natural vegetation.

### **Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is designated as Class 1 or Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, upland portions of the parcel are indicated in the current version (March 2002) as Multiple Use and the xeroriparian areas are indicated as Important Riparian Areas.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

Observations: This parcel was visited on 2 April 2002 by an SWCA senior scientist. The parcel appears to have little potential as a movement corridor for CFPO. No saguaros and few large mesquites were observed. It is possible that burrowing owl and Tucson shovelnosed snake may occur on the site, but none were observed.

**Conclusion:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value for species currently listed under the Endangered Species Act.

## Parcel 9

**Name:** Lupori Farm and Reeves Farm North

**Legal Description:** T12S R10 E, E ½ Sec. 24, NE ¼ Sec. 26, NW ¼ and N ½ of NE 1/4 Sec. 25.

**Purchase Date:** After 1980

**Total Acreage:** 725

Undisturbed Acreage: 128

Disturbed Acreage: 597 (Irrigated Acreage: 597)

**Adjacent Land Ownership and Condition:** All land adjacent to this parcel is privately owned, with the exception of parcels of City-owned land retired farmland at the northwest corner (Parcel 8) and the east border (Parcel 11). Land bordering this parcel to the west is active agricultural land. The remainder of the surrounding lands are undisturbed open space.

**Edaphic Conditions:** The elevation range is from approximately 2010 to 2040 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Cement-lined ditches are border and cross the parcel, dividing it into fields. Ditches and berms block the natural flow of water across the parcel and cause areas of ponding. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	128	17
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub)	597	83

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub.

**General Condition:** Most of this parcel consists of sparsely vegetated open fields, but there are areas of dense mesquite developing behind barriers to sheetflow.

### **Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is designated as Class 1 or Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, upland portions of the parcel are indicated as Multiple Use and the xeroriparian areas are indicated as Important Riparian Areas.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

Observations: This parcel was visited on 2 and 10 April 2002 by an SWCA senior scientist. The parcel appears to have little potential as a movement corridor for CFPO, except along the eastern edge, which has dense mesquite. It is possible that burrowing owl and Tucson shovelnosed snake may occur on the site, but none were observed. Bell's vireos were present in dense mesquite along the eastern edge of the parcel. The dense mesquites are similar to those along Brawley Wash, and the parcel was probably originally part of the Brawley Wash corridor.

**Conclusion:** This parcel does not currently provide suitable nesting or permanent habitat for any Federal listed threatened or endangered species. Part of the parcel does, however, have potential mitigation value as a dispersal corridor for CFPO. Bell's vireos are known to inhabit this parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known from the property at this time. Protection of the mesquites along the eastern border of this parcel might add to the ecological value of the Brawley Wash corridor. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.



## Parcel 10

**Name:** Chu Farm

**Legal Description:** T12S R11 most of the south ½ of Section 20

**Purchase Date:** After 1980

**Total Acreage:** 302

Undisturbed Acreage: 0

Disturbed Acreage: 302 (Irrigated Acreage: 294)

**Adjacent Land Ownership and Condition:** Lands to the north, south, and west of this parcel are privately owned. To the east is State land. The private land is agricultural and low-density residential. The State land is undisturbed open land, with Sonoran Desertscrub vegetation.

**Edaphic Conditions:** The elevation range is from approximately 2025 to 2045 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Cement-lined ditches border and cross the parcel, dividing it into fields. Ditches and berms block the natural flow of water across the parcel and cause areas of ponding. Part of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub) and annual weeds	302	100

The Harris Riparian Vegetation map shows no riparian vegetation on this parcel.

**General Condition:** This entire parcel consists of sparsely vegetated open fields.

### Suitability for Special-interest Species:

**Designations:** This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is designated as Class 1 or Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated in the current version (March 2002) as Multiple Use.

**Hypothetical Potential:** The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2 and 14

**Observations:** This parcel was visited on 2 and 10 April 2002 by an SWCA senior scientist. The parcel appears to have little potential as a movement corridor for CFPO. It is possible that burrowing owl may occur on the site, but none were observed. The parcel is probably not suitable for Tucson shovelnosed snake because the entire parcel has been impacted by agriculture.

**Conclusion:** This parcel does not currently provide suitable habitat for any Federal listed threatened or endangered species. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known. The parcel shows no potential mitigation value.

## Parcel 11

**Name:** Comisky Farm and Levkowitz Farm

**Legal Description:** T12 S R11E, most of Section 30, except the SW ¼ of the SW 1/4

**Purchase Date:** Before 1980

**Total Acreage:** 648

Undisturbed Acreage: 0

Disturbed Acreage: 648 (Irrigated Acreage: 0)

**Adjacent Land Ownership and Condition:** Land to the north and south of his parcel is privately owned. To the east is private land adjacent to the north half of the parcel and State land adjacent to the south half. The private land is agricultural and low-density residential. The State land is undisturbed open land, with Sonoran Desertscrub vegetation. Most of the land to the west is private, undisturbed open land, but a portion is City-owned Parcel 9.

**Edaphic Conditions:** The elevation range is from approximately 2035 to 2055 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Cement-lined ditches border and cross the parcel and a major drainage ditch bisects the approximate center of the parcel. Although the parcel has no ADWR certified irrigated acreage, portions of it appear to have been irrigated historically. All of the parcel appears to have been flooded repeatedly and also disturbed by earth moving and vehicle activity. Blockage of this ditch by a road berm has resulted in ponding and high soil moisture, as evidenced by dense mesquite growth. All of this parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	224.52 Sonoran Riparian Forest and Woodland	Mesquite (as tree)	90	14
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub) and annual weeds	558	86

The Harris Riparian Vegetation map shows some of the riparian vegetation on this parcel as consisting of 224.52 Sonoran Riparian Forest and Woodland, Mesquite series, and some as 154.10, Sonoran Desertscrub Xeroriparian. The larger mesquites are in the area where water ponds. Most if not all of the land indicated as having 154.10 Sonoran Desertscrub Xeroriparian by Harris is, in fact, 364.1 Sonoran Vacant or Fallow land that has had second growth mesquite.

**General Condition:** Most of the parcel consists of sparsely vegetated open fields that have had multiple impacts consisting of dumping refuse and off-road vehicle use. Sheetflow is interrupted by berms and ditches. The natural condition of the land cannot be discerned because of multiple direct and indirect impacts. Mesquites along the drainage ditch and in the ponding area are large and dense.

**Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. Approximately half of the parcel is designated as Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated as Biological Core and Important Riparian, with the southeast corner of the parcel as Multiple Use.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

Observations: This parcel was visited on 16 April 2002 by an SWCA senior scientist. The dense mesquite in the center of the parcel appears to have some potential as a movement corridor for CFPO, although it is not currently connected to similar vegetation in a continuous corridor. It is possible that burrowing owl may occur on the site, but none were observed. The parcel is probably not suitable for Tucson shovelnosed snake because the entire parcel has been impacted by agriculture. It is unlikely that the lowland leopard frog is present on the site.

**Conclusion:** This parcel does not currently provide suitable habitat for any Federal listed threatened or endangered species. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known. The parcel shows some potential mitigation value in the context of management of Brawley Wash as a riparian corridor, but acquisition of additional lands not currently owned by the City of Tucson would be necessary to make this a useful component of such a corridor. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 12

**Name:** Reeves Farm South

**Legal Description:** T12S R10E, Section 35, the south ½ and the northwest ¼, except the northwest ¼ of the northwest ¼

**Purchase Date:** After 1980

**Total Acreage:** 440

Undisturbed Acreage: 440

Disturbed Acreage: 0 (Irrigated Acreage: 0)

**Adjacent Land Ownership and Condition:** Land surrounding this parcel is undisturbed or very low-density residential land that is privately owned and has Sonoran Desertscrub vegetation.

**Edaphic Conditions:** The elevation range is from approximately 2050 to 2070 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Most of the parcel has been affected by flooding, and the entire parcel is within the FEMA-designated 100-year flood area.

**Mapped Land Uses:** Open Space Undisturbed

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	31	7
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush and saltbush	409	93

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub.

**General Condition:** The parcel is undisturbed except for a north-to-south road running through the eastern portion of the parcel. A wash floodplain runs southeast to northwest through the central portion of the parcel. Wash vegetation is characterized by mesquite stringers and barren, silty flats. The floodplain is bordered by an upland creosote bush-mixed scrub association to the north and by an upland saltbush-bursage association with scattered patches of creosote bush to the south. There is a breached earthen dike at the northern end of the parcel, probably originally constructed to impound water for livestock.

### **Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The central wash is designated as Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated as Multiple Use and Important Riparian.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

Observations: The parcel was visited on April 4, 2002 by an SWCA senior scientist. Only one saguaro was observed on the parcel. Mesquites do not appear large enough to provide nest sites for CFPO, and understory vegetation is sparse. The xeroriparian vegetation is generally sparse, and is not a well-developed continuous corridor. The current depth to water is probably beyond the natural regeneration and growth potential of large trees. The parcel appears to have some of the characteristics of areas in which burrowing owls and shovelnosed snakes are known to occur, and may provide a possible movement corridor for CFPO. No special interest species were observed.

**Conclusion:** This parcel does not currently provide suitable habitat for any Federal listed threatened or endangered species. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known. The parcel shows some potential mitigation value in the context of management of Brawley Wash as a riparian corridor, but acquisition of additional lands not currently owned by the City of Tucson would be necessary to make this a useful component of such a corridor.

## Parcel 13

**Name:** John Kai Farms

**Legal Description:** T12S R10E Section 33

**Purchase Date:** Before 1980

**Total Acreage:** 639

Undisturbed Acreage: 0

Disturbed Acreage: 639 (Irrigated Acreage: 637)

**Adjacent Land Ownership and Condition:** Land to the north and east of this parcel is privately owned open space, undisturbed, with Sonoran Desertscrub vegetation. To the south is City-owned land (Parcel 14). To the west is State land that is actively farmed.

**Edaphic Conditions:** The elevation range is from approximately 2045 to 2065 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Most of the parcel is outside the FEMA-designated 100-year flood area.

**Mapped Land Uses:** Agricultural Land Out of Production

### Vegetation

General	Association	Dominant species	Acres	% of parcel
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	639	100

The Harris Riparian Vegetation map shows no riparian vegetation on this parcel.

**General Condition:** The parcel is entirely fallow agricultural land, with sparse vegetation consisting of a mixture of native and non-native species.

### Suitability for Special-interest Species:

Designations: This parcel is not within a CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is Class 1 or Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated as Multiple Use or Recovery Management Area, because it was within a CFPO Recovery Area in the December 2000 Draft Recovery Plan.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1

Observations: The parcel was visited on 16 April 2002 by an SWCA senior scientist. Most of the parcel is sparsely vegetated retired farmland. No burrowing owls were observed.

**Conclusion:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value. Although conditions resemble those present in sites known to have burrowing owls, no burrowing owls were observed. It is unlikely that any other Priority Vulnerable Species besides burrowing owls would occur on the parcel under current conditions. This parcel has no vegetation characteristics that suggest why it is included in a CFPO Recovery Area in the December 2000 Draft Recovery Plan. It will probably never recover to a condition where it might provide suitable vegetation for a movement corridor for CFPO.



## Parcel 14

**Name:** Tucker Farm

**Legal Description:** T13S R10E, most of Section 4

**Purchase Date:** After 1980

**Total Acreage:** 608

Undisturbed Acreage: 0

Disturbed Acreage: 608 (Irrigated Acreage: 608)

**Adjacent Land Ownership and Condition:** Land to the north and west of this parcel is agricultural land out of production (City-owned Parcels 13 and 16). To the east is an area of several privately owned lots, some of which have mobile or permanent homes, and others are currently undeveloped. To the south is actively farmed agricultural land.

**Edaphic Conditions:** The elevation range is from approximately 2065 to 2090 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. All of the parcel is outside the FEMA-designated 100-year flood area.

**Mapped Land Uses:** Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	608	100

The Harris Riparian Vegetation map shows no riparian vegetation on this parcel.

**General Condition:** The parcel is entirely fallow agricultural land, with sparse vegetation consisting of a mixture of native and non-native species.

### Suitability for Special-interest Species:

Designations: This parcel is not within a CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is Class 1 or Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated as Multiple Use or Recovery Management Area, because it was within a CFPO Recovery Area in the December 2000 Draft Recovery Plan.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1

Observations: The parcel was visited on 16 April 2002 by an SWCA senior scientist. The entire parcel is sparsely vegetated retired farmland. No burrowing owls were observed.

**Conclusion:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value. Although conditions resemble those present in sites known to have burrowing owls, no burrowing owls were observed. It is unlikely that any other Priority Vulnerable Species besides burrowing owls would occur on the parcel under current conditions. This parcel has no vegetation characteristics that suggest why it was included in a CFPO Recovery Area in the December 2000 Draft Recovery Plan. Xeroriparian vegetation is discontinuous in this general area, with potential corridors interrupted by areas of active agriculture or fallow fields. It will probably never recover naturally to a condition that might provide suitable vegetation for a movement corridor for CFPO.

## Parcel 15

**Name:** Flying "E" Bar Farm

**Legal Description:** T12S R10E approximately the E ½ of Sec 31 and T13S R10E approximately the E ½ of Sec 6

**Purchase Date:** Before 1980

**Total Acreage:** 702

Undisturbed Acreage: 91

Disturbed Acreage: 611 (Irrigated Acreage: 334)

**Adjacent Land Ownership and Condition:** Land to the north and west of this parcel is privately owned small parcels, mostly developed as low-density residential and horse properties. To the east is a section of State land, with a narrow strip of undeveloped land immediately adjacent to the City-owned parcel, and the remainder of the section actively farmed. To the south is undeveloped Federal land that is in Ironwood Forest National Monument.

**Edaphic Conditions:** The elevation range is from approximately 2045 to 2090 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. Part of the parcel is within the FEMA-designated 100-year flood area and shows evidence of flooding.

**Mapped Land Uses:** Open Space Undisturbed, Agricultural Land Out of Production

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	31	4
Open Space Undisturbed	154.11 Sonoran Desertscrub	Mesquite and creosote bush	60	9
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	671	85

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub.

**General Condition:** The parcel is consists of fallow agricultural land, with sparse vegetation consisting of a mixture of native and non-native species, areas of native vegetation that have been flooded, and areas of mesquite that has grown where flood waters are retained. Two small areas of native vegetation that

appear to be relatively undisturbed are present, one at the northeast corner, the other at the southeast corner.

**Suitability for Special-interest Species:**

Designations: This parcel is not within a CFPO Recovery Area in the August 2002 Draft Recovery Plan. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. No portion of the parcel is Class 1 or Class 2 habitat according to Shaw et al., although a strip of Class 2 habitat is adjacent to the east border of the parcel. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated as Multiple Use or Recovery Management Area, because it was within a CFPO Recovery Area in the December 2000 Draft Recovery Plan.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1
Red-backed Whiptail	2

Observations: The parcel was visited on 16 April 2002 by an SWCA senior scientist. Most of the parcel is sparsely vegetated retired farmland, but there are small patches of native vegetation that appear undisturbed. No burrowing owls were observed. The parcel does contain conditions similar to those in which red-backed whiptail is known to occur, and is separated from potentially suitable habitat for this species by residential development.

**Conclusion:** This parcel shows no conditions that suggest that it would be of mitigation or restoration value. Although conditions resemble those present in sites known to have burrowing owls, no burrowing owls were observed. It is unlikely that any other Priority Vulnerable Species besides burrowing owls would occur on the parcel under current conditions. This parcel has no vegetation characteristics that suggest why it was included in a CFPO Recovery Area in the December 2000 Draft Recovery Plan. Xeroriparian vegetation is discontinuous in this general area, with potential corridors interrupted by areas of active agriculture or fallow fields. It will probably never recover naturally to a condition that might provide suitable vegetation for a movement corridor for CFPO.

**Parcel 16****Name:** Edward Anway Farm**Legal Description:** T13S R10E, Section 5**Purchase Date:** Before 1980**Total Acreage:** 640

Undisturbed Acreage: 191

Disturbed Acreage: 449 (Irrigated Acreage: 449)

**Adjacent Land Ownership and Condition:** Land to the north is actively farmed. To the east is City-owned Parcel 14, which is entirely fallow farmland. To the south is a section with the west half private undisturbed open land and the east City-owned Parcel 17. To the west is City-owned Parcel 15.

**Edaphic Conditions:** The elevation range is from approximately 2060 to 2080 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. The west half of the parcel is within the FEMA-designated 100-year flood area and shows evidence of flooding.

**Mapped Land Uses:** Open Space Undisturbed, Open Space River, Agricultural Land Out of Production

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space River	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	27	4
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush	164	26
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	449	70

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub.

**General Condition:** The western ¼ is undisturbed mixed-mixed scrub, except for the southern end, which supports a dense mesquite woodland association. The undisturbed western portion is bordered to the east by a bermed wash, which supports a dense linear mesquite-mixed scrub association (with whitethorn acacia and desert broom). The eastern ¾ of the parcel is former agricultural land, with the southern ½ less recovered than the northern ½. The southern ½ is largely barren with scattered (low density) shrubby mesquites and abundant weeds. The northern ½ supports a medium density of shrubby mesquites, except at the northern end along Tucker Road where impounded water has enhanced conditions, resulting in a small but dense mesquite woodland patch.

**Suitability for Special-interest Species:**

Designations: This parcel not within a CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The mesquite-lined drainage on this parcel is Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated in the current version (March 2002) as Multiple Use or Recovery Management Area, because it was within a CFPO Recovery Area in the December 2000 Draft Recovery Plan.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1

It is possible that CFPOs might use the parcel as a travel corridor, particularly the dense mesquite patches.

Observations: The parcel was visited on April 11, 2002 by an SWCA senior scientist. No saguaros were observed on the parcel. Many of the mesquites in the woodland patch in the southwestern corner of the parcel are greater than 6" diameter at 4.5 feet above ground. There is little or no woody perennial understory vegetation development anywhere on the parcel. Birds noted in the southwestern corner of the parcel included singing Bell's vireos and ash-throated flycatchers.

**Conclusion:** This parcel may provide mitigation potential as a travel corridor for CFPO, particularly if linkages to the north and south are enhanced and/or maintained. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

sheet flow, supporting a larger patch of mesquite woodland. Intermixed in this patch are a few large Mexican paloverdes. Livestock sign (droppings) was evident in the southeastern corner of the parcel.

**Suitability for Special-interest Species:**

Designations: This parcel is not within a CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The mesquite-lined drainage on this parcel is Class 2 habitat according to Shaw et al. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft SDCP, the parcel is indicated in the current version (March 2002) as Multiple Use or Recovery Management Area, because it was within a CFPO Recovery Area in the December 2000 Draft Recovery Plan.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1

It is possible that CFPOs might use the parcel as a travel corridor, particularly the dense mesquite patches.

Observations: The parcel was visited on April 11, 2002 by an SWCA senior scientist. No saguaros were observed on the parcel. Many of the mesquites (and the Mexican paloverdes) in the woodland patch in the southwestern corner of the parcel are greater than 6" diameter at 4.5 feet above ground. There is little or no woody perennial understory vegetation development anywhere on the parcel. Birds noted in the southwestern corner of the parcel, where surface water was present during the site visit, included singing Bell's vireos, ash-throated flycatcher, vermilion flycatcher, Gambel's quail, and, along the irrigation canal forming the eastern border of the parcel, a spotted sandpiper.

**Conclusion:** This parcel may provide mitigation potential as a travel corridor for CFPO, particularly if linkages to the north and south are enhanced and/or maintained. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

**Parcel 17****Name:** Anway Farm**Legal Description:** T13S R10E, most of the E ½ of Section 8**Purchase Date:** Before 1980**Total Acreage:** 294

Undisturbed Acreage: 28

Disturbed Acreage: 266 (Irrigated Acreage: 232)

**Adjacent Land Ownership and Condition:** Land to the north is City-owned Parcel 16. To the east is actively farmed land and low-density residential land. To the south is largely undeveloped land subdivided into 10-acre plots. To the west is undeveloped private land with a small pond.

**Edaphic Conditions:** The elevation range is from approximately 2080 to 2100 feet. Soils are deep alluvium, consisting mostly of sand and sandy-loam. No permanent surface water was detected on the parcel. The northwest corner of the parcel is within the FEMA-designated 100-year flood area and shows evidence of flooding. Portions of the parcel that are not in the designated floodplain also appear to have been flooded. Fine, silty topsoil over much of parcel suggests periodic flooding. The southwestern ¼ has very sandy soil.

**Mapped Land Uses:** Agricultural Land Out of Production**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Agricultural Land Out Of Production	224.52 Sonoran Riparian Forest and Woodland	Mesquite (as tree)	28	10
	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	266	90

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 224.52 Sonoran Riparian Forest and Woodland (mesquite).

**General Condition:**

The majority of the parcel is sparsely vegetated with scattered shrubby mesquites. Irrigation runoff has enhanced mesquite growth in the southeastern portion of the parcel. The canal along the southeastern boundary of the parcel supports a dense linear mesquite woodland with abundant desert broom. Water running out of the canal near the southeastern corner of the parcel proceeds in a northwesterly direction as



## Parcel 18

**Name:** Jarvis Farm, North

**Legal Description:** T13S R10E, NE ¼ of Section 11, the NW ¼ and the W ½ of the E ½ of Section 12

**Purchase Date:** After 1980

**Total Acreage:** 481

Undisturbed Acreage: 0

Disturbed Acreage: 481 (Irrigated Acreage: 0)

**Adjacent Land Ownership and Condition:** To the north are parcels of low-density residential and undeveloped land. A rough dirt road borders the north end of the parcel following a utility line. To the east is private land that is undeveloped. To the south is private land, with low-density residential and undeveloped parcels owned by different owners, and City-owned Parcel 19B, which is agricultural land, out of production. To the west of Section 11 is City-owned Parcel 19A, which is agricultural land, out of production.

**Edaphic Conditions:** The approximate elevation of this site is 2100 feet. The site is essentially flat. Soils are deep alluvium with an overlay of fine material apparently deposited by flood. It appears that the entire site was under water following several major floods in this century. Water flow across the site is detained by an elevated road at the north end of the site. Also, the site has been impacted by off road vehicle activity, which has compacted soil in some places and precipitated erosion in other places. No surface water was observed on the parcel. The entire parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Open Space Undisturbed, Open Space River.

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	193	40
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush and saltbush	216	45
Open Space River	224.52	Mesquite	72	15

The Harris Riparian Vegetation map shows that the riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub and 224.52 Mesquite.

**General Condition:** Hydrology, soils, and vegetation of this parcel have been greatly impacted by flooding and human activities. An abandoned ditch and berm bisect Section 11 from north to south, and this parcel lies to the east of these structures. The entire parcel appears to have been flooded repeatedly

by impounded floodwaters of Brawley Wash, from the ditch eastward across and beyond the parcel. Most of the soil surface is bare of vegetation and covered with very fine clay soil. There are many small dead mesquites. There are no roads on the parcel, but it has been used by off-road vehicles and there are several piles of trash. Along Brawley Wash, on the east side of the parcel, there is a fairly intact corridor of riparian vegetation with large mesquites and a few ironwoods. Some of the trees have been cut.

#### **Suitability for Special-interest Species:**

Designations: This parcel is entirely outside any CFPO Recovery Area. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. The parcel is bisected by Brawley Wash, which is considered "Class I and II Wildlife Habitat." The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft Sonoran Desert Conservation Plan, upland portions of the parcel are indicated as Multiple Use or Recovery Management Areas and the xeroriparian areas are indicated as Important Riparian Areas and a small portion of these is designated as Biological Core.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

It is possible that CFPOs might use the wash as a movement corridor, especially if the trees were protected from cutting, or if additional trees were planted and nurtured.

Observations: The parcel was visited on 20 March 2002 by an SWCA senior scientist. No saguaros were observed on the parcel. There is an area of dense mesquites in the northwest corner of the parcel, where water is impounded by berms. No conditions resembling those in which lowland leopard frogs are usually found were present on the parcel. Although conditions resemble those present at sites known to have burrowing owls, no burrowing owls were observed. Portions of this parcel have sandy soil similar to that in which Tucson shovel-nose snakes have been found. The mesquites along Brawley Wash and in the northwest corner of the parcel may provide habitat for Bell's vireos and Abert's towhees, but none were observed.

**Conclusion:** This parcel does not currently provide suitable nesting or permanent habitat for any Federal listed threatened or endangered species. Part of the parcel does, however, have potential mitigation value as a dispersal corridor for CFPO. Bell's vireos and Abert's towhees may inhabit this parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known from the property at this time, but Tucson shovelnosed snake is possible. Protection of the mesquites along the eastern border of this parcel might add to the ecological value of the Brawley Wash corridor. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 19A

**Name:** Nichols Farm

**Legal Description:** T13S R10E, Sec 11: W ½; Sec 14: NW ¼; Sec 15: E ½

**Purchase Date:** After 1980

**Total Acreage:** 792

Undisturbed Acreage: 0

Disturbed Acreage: 792 (Irrigated Acreage: 772)

**Adjacent Land Ownership and Condition:** To the north is a dirt road and power line. A power substation is in the northwest corner. North of the road is low-density residential development. To the east is City-owned Parcel 18 and undeveloped private land. To the south are City-owned Parcels 19B and 20, which are retired agricultural land. To the west is private retired agricultural land and low-density residential development.

**Edaphic Conditions:** Approximate elevation range is 2140 ft in the southwest corner to 2100 ft in the northeast corner of the parcel. Soils are deep alluvial soils that have been farmed. The land is flat, with a slight downward slope to the northeast (less than 1%). No open water is present on the parcel.

**Mapped Land Uses:** Agricultural Land Out of Production.

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Agricultural land out of production	364.1 Sonoran fallow or vacant land	Mesquite (as shrub), desert broom, Russian thistle, mixed grasses	792	100

The Harris Riparian Vegetation map shows a narrow strip of 154.10 Sonoran Desertscrub Xeroriparian along the east boundary of the parcel in Sections 11 and 14. This consists of mesquite and desert broom growing along a ditch. There is no undisturbed xeroriparian vegetation on the parcel.

**General Condition:** The entire parcel consists of fallow agricultural fields with grasses and shrubs. There are no large trees or areas of mature native vegetation.

### Suitability for Special-interest Species:

**Designations:** This parcel is entirely outside CFPO Recovery Areas and Special Management Areas. It is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. In the draft Sonoran Desert Conservation Plan, this parcel is considered as a Multiple Use Area. The strip of xeroriparian vegetation along the east boundary is considered an Important Riparian Area.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Tucson shovelnosed snake	2

Observations: The parcel was visited on 20 March by an SWCA senior scientist. There is no undisturbed natural vegetation on this parcel. This parcel has none of the constituent elements of habitat known to be used by the CFPO for breeding, foraging, or dispersal, except along the Brawley Wash. There are no resources on this parcel that are suitable for use by other species currently listed as threatened or endangered. The parcel may be suitable for burrowing owl , but no burrowing owls or suitable burrows were observed. Because the entire parcel has been disturbed by agricultural activities, it is very unlikely that Tucson shovelnosed snake would be present.

**Conclusion:** This parcel does not currently provide suitable nesting or permanent habitat for any Federal listed threatened or endangered species. It is possible that burrowing owls might occur on the parcel. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are likely to occur on the property at this time.

## Parcel 20

**Name:** Cactus-Avra Farm

**Legal Description:** T13S R10E East ½ Sec. 22, all of Sec. 23 and 26

**Purchase Date:** Before 1980.

**Total Acreage:** 1604

Undisturbed Acreage: 0

Disturbed Acreage: 1604 (Irrigated Acreage: 1585)

**Adjacent Land Ownership and Condition:** To the north are City-owned Parcels 19A and 19B, which are retired farmland. To the east is City-owned parcel 21, also retired farmland. To the south is Federal land, part of Ironwood Forest National Monument. To the west is private land, subdivided for low-density residential development, but only partially developed.

**Edaphic Conditions:** Approximate elevation ranges from 2140 to 2190 feet. Soils are deep alluvial soils that have been farmed and include some sandy areas surrounded by loamy soils. The land is flat, with a slight downward slope to the north (less than 1%). No open water is present on the parcel.

**Mapped Land Uses:** Agricultural Land Out of Production.

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Agricultural land out of production	364.1 Sonoran fallow or vacant land	Mesquite (as shrub), desert broom, Russian thistle, mixed grasses	1604	100

The Harris Riparian Vegetation map shows no riparian vegetation on this parcel.

**General Condition:** The entire parcel consists of fallow agricultural fields with grasses and shrubs and some scattered mesquites approximately ten feet tall.

### Suitability for Special-interest Species:

**Designations:** This parcel is entirely outside CFPO Recovery Areas and Special Management Areas. It is adjacent to, but outside of, formerly designated Critical Habitat for the CFPO. It is entirely outside the currently known geographic range of PPC. In the draft Sonoran Desert Conservation Plan, this parcel is included in the Multiple Use category.

**Hypothetical Potential:** The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

**General Condition:** The majority of the parcel was used formerly for agricultural production. The only exception is the approximately 160-acre triangle of land in the northeastern portion of Section 5, which has been impacted by off-road vehicle activity, trash dumping, earth moving, and flooding. During the period of agricultural production, unimproved dirt roads and concrete irrigation channels were constructed throughout the area. Following their purchase by City of Tucson, these land parcels were retired from agricultural production and the irrigation channels were abandoned. Since their retirement, but prior to the designation of these lands as critical habitat, Tucson Water constructed two 20-acre recharge basins, one in Section 5 and one in Section 8. A third basin was constructed outside former critical habitat in Section 31.

Natural re-establishment of vegetation varies within the area, probably because individual parcels were subjected to varying intensities of agricultural production prior to their purchase by City of Tucson. Over much of the project area, vegetation consists of small shrubs, weedy grasses, and forbs. Mesquites occur throughout much of the project area, but are typically small (from 5-15 feet in height and less than 6 inches in diameter at breast height) and scattered in distribution. Mesquites and other native woody perennial species, including whitethorn acacia, creosote bush, and triangle-leaf bursage, are most abundant at the following general locations: Brawley Wash and the area northeast of Brawley Wash in Section 5, the southern half of Section 6, and the northern portions of Sections 7 and 8. An estimated 2-5% of the mesquites in these areas are 6 inches in diameter at breast height. The majority of these larger mesquites are associated with drainage ditches and other areas designated by the U.S. Army Corps of Engineers (Corps) as jurisdictional waters of the U.S. (e.g., Brawley Wash). A large drainage ditch (canal) runs along the west side of sections 6, 31, and 30. Though narrow, the ditch is lined with relatively large mesquites. There are no ironwoods and very few paloverdes in the project area. Only four saguaros were observed: two in the northeast ¼ of Section 5, and two in the northwest ¼ of Section 8.

In the western portion of sections 30 and 31 is a large (several acres) elevated (15-20 ft.) soil storage area. The soil pile, which is level on top, supports a vegetation community dominated by shrubby mesquite, whitethorn acacia, and four-wing saltbush.

#### **Suitability for Special-interest Species:**

Designations: No known CFPO records from the parcel. Sections 5, 6, 7, 8 were in proposed CFPO Recovery Area 2 in the December 2000 Draft Recovery Plan and formerly designated critical habitat, but in the August 2001 Draft, the Recovery Area had been expanded to include sections 31, 4, and 9 also. The majority of this parcel (all but sections 24, 25, and 30) was addressed during a previous section 7 consultation between the EPA and USFWS. As part of this consultation, Tucson Water will set aside up to approximately 260 acres of City-owned land outside of proposed Recovery Area 2, roughly 120 acres in Section 4 and 140 acres in Section 9, and approximately 213 acres of City-owned land within proposed Recovery Area 2, 160 acres in the northeast portion of Section 5 and 53.3 acres (five inter-basin corridors) in sections 5 and 8. The parcel is bisected by Brawley Wash, which is considered "Class II Wildlife Habitat" according to Shaw. In the Draft SDCP, portions of this parcel are indicated as Biological Core, Important Riparian Areas, Multiple Use or Recovery Area, and Not In Reserve.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Townsend's big-eared bat	2
Tucson shovelnosed snake	14

It is possible that CFPOs might use the wash as a movement corridor.

Observations: The parcel has been visited many times by SWCA senior scientists in the course of conducting work in support of compliance with environmental regulations and mosquito surveillance. No special-interest species have ever been observed on the site. Formal surveys for cactus ferruginous pygmy-owls have been conducted for five years on portions of this parcel, and no owls have been detected. It is possible that Tucson shovelnosed snake might be present on the relatively undisturbed portion of section 5, but we consider that to be unlikely because of geographic isolation, vehicular impacts, and flooding. The parcel resembles sites at which burrowing owls have been observed, but no burrowing owls have ever been observed on the site. A red-tailed hawk nest with one young was observed in a tree in the drainage ditch along the west side of Section 30.

Pertinent Reports:

SWCA, Inc. 1999. Biological assessment of potential impacts to cactus ferruginous pygmy-owl from the proposed Central Avra Valley Storage and Recovery Project (CAVSARP). Prepared by SWCA, Inc. Environmental Consultants, Tucson, on behalf of Tucson Water Department.

SWCA, Inc. 2000a. Addendum to biological assessment of potential impacts to cactus ferruginous pygmy-owl from the proposed Central Avra Valley Storage and Recovery Project (CAVSARP). Prepared by SWCA, Inc. Environmental Consultants, Tucson, on behalf of Tucson Water Department.

SWCA, Inc. 2000b. Supplemental information requested by FWS. Letter (dated 17 May 2000) to Mr. Eugene Bromley, EPA, from SWCA, Inc. Environmental Consultants, Tucson, on behalf of Tucson Water Department.

SWCA, Inc. 2000c. Management plan for cactus ferruginous pygmy-owl at the site of the proposed CAVSARP Groundwater Recharge System in the Avra Valley, Pima County, Arizona.

USFWS. 2000. Biological opinion on the effects of the management plan for cactus ferruginous pygmy-owl at the site of the proposed CAVSARP Groundwater Recharge System in the Avra Valley, Pima County, Arizona.

**Conclusion:** Limited future mitigation potential for CFPO in sections 24, 25, and 30, the area not addressed during the previous section 7 consultation. Possible opportunity for CFPO mitigation in these areas in the context of surrounding land parcels. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 22

Name: Trust No. 25

Legal Description: T13S, R10E, portion of Section 20

Purchase Date: Before 1980

Total Acreage: 349

Undisturbed Acreage: 349

Disturbed Acreage: 0 (Irrigated Acreage: 0)

**Adjacent Land Ownership and Condition:** This parcel is bordered on the north, south, and west by Ironwood Forest National Monument. The northeast corner is bordered by privately owned land with low-density residential development. To the east is undeveloped private land.

**Edaphic Conditions:** Approximate elevation ranges from 2140 to 2150 feet. Soils are deep alluvial sandy soils that have apparently not been subject to irrigated farming. It appears that portions of the land have been flooded repeatedly. The northeast half of the parcel is within the designated 100-year floodplain. The land is generally flat, with a slight downward slope to the north, and it is crossed by several braided washes, with 11 distinct washes at the south end of the parcel, coalescing into four at the north end. No open water is present on the parcel.

**Mapped Land Uses:** Open Space Undisturbed, Open Space River

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space River	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	115	33
Open Space Undisturbed	154.11 Sonoran Desertscrub	Creosote bush	234	67

The Harris Riparian Vegetation map shows riparian vegetation on this parcel as 154.10 Sonoran Desertscrub Xeroriparian.

### Suitability for Special-interest Species:

**Designations:** This parcel is not within a CFPO Recovery Area, and it is not within the formerly designated Critical Habitat for the CFPO. It is entirely outside the known geographic range of PPC. The northeastern portion of this parcel is bisected by a tributary of Brawley Wash, and is considered "Class II Wildlife Habitat." The northwestern portion of the parcel is also heavily influenced by an existing wash system. In the draft Sonoran Desert Conservation Plan, xeroriparian portions of this parcel are indicated as Important Riparian Areas, and the upland portions are included in the Multiple Use or Recovery Management Areas category.



Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Burrowing owl	1

It is possible that CFPOs might use the parcel as a travel corridor, particularly the dense mesquite patches.

Observations: The parcel was visited on August 6, 2002 by an SWCA senior scientist. No saguaros were observed on the parcel. Some of the mesquites in the northern and northeastern portion of the parcel are greater than 6" diameter at 4.5 feet above ground. Some woody perennial understory vegetation is present.

**Conclusion:** This parcel may provide mitigation potential as a travel corridor for CFPO, particularly if linkages to the north and south are enhanced and/or maintained. It is not likely to provide suitable nesting or permanent habitat for any Federal listed threatened or endangered species. Bell's vireos and Abert's towhees may inhabit this parcel. This parcel has more vegetation than is typically found in association with burrowing owls. No other species listed by Pima County as Priority Vulnerable Species or by the U.S. Fish and Wildlife Service as Threatened or Endangered are known from or likely to occur on the property at this time. Protection of the washes and mesquites might add to the ecological value of the Brawley Wash corridor, although this parcel is away from the primary corridor. It might also have value as an addition to Ironwood Forest National Monument. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 23

**Name:** Growers Finance Farm, Double Z.S. Farm, Morse Farm

**Legal Description:** T14S R11E, portions of sections 22, 27, 28, 29, 33 and 34

**Purchase Date:** Before 1980

**Total Acreage:** 2349

Undisturbed Acreage: 0

Disturbed Acreage: 2349 (Irrigated Acreage: 2190)

**Adjacent Land Ownership and Condition:** To the north is private undeveloped land and Tohono O'odham land that is actively farmed. To the east is a mixture of private, State and Pima County Flood Control District land, all of which is undeveloped or developed at very low density. To the south is private land, with multiple lots for low-density development. To the west is private land with multiple lots for low-density development and undeveloped Pascua Yaqui land. A parcel of private land, approximately 40 acres, is in the approximately center of the parcel.

**Edaphic Conditions:** Approximate elevation ranges 2320 feet at the southwest end of the parcel to 2290 feet at the north end. Slope is generally toward the northwest, and is less than 1%. Soils are deep alluvial soils that have been farmed. Essentially all of the land has been disturbed, either by irrigated agriculture, off-road vehicle activity, earth moving, berm construction, or wash channeling. Dozens of cement-lined ditches cross the property, dividing it into many fields. The portion of Black Wash that crosses the parcel has been channelized and is now a drainage ditch. Roads, ditches, and berms block sheetflow across the parcel, and result in impoundments, most of which are short-lived. No permanent open water is present on the parcel. The entire parcel is within the boundary of the FEMA-designated 100-year flood event

**Mapped Land Uses:** Agricultural Land Out of Production.

### Vegetation:

General	Community	Association	Dominant species	Acres	% of parcel
Agricultural Land Out of Production	Sonoran fallow or vacant land	Mesquite-disclimax	Mesquite, scattered cacti (cholla, prickly pear, barrel), weedy grasses and forbs	2349	100

The Harris Riparian Vegetation map shows riparian vegetation on this parcel as including 224.52 Mesquite in sections 22, 24, 27, and 34. However, the actual condition of vegetation on the parcel does not support the designation of 224.52 in comparison to other sites that have that designation, except along the artificial wash channels. These are minimal quality areas, with mesquite growing along artificial or interrupted drainage ways and in old fields.

**General Condition:** Considering that the entire parcel is retired agricultural land, most of which was irrigated, mesquite-dominated vegetation has become quite well developed over most of the parcel. This

is almost certainly a result of its location in the Black Wash floodplain. Though the area was formerly bisected by Black Wash, Black Wash has been channelized on the eastern portion of the parcel, though it may still contribute sheetflow to portions of the parcel that are not channelized. Channels run north-to-south through the parcel and along the eastern boundary. The channel banks are lined with dense mesquite, many of which are greater than 6" diameter at 4.5 feet above ground level. The most of the parcel has variable densities of shrubby mesquites. There are two short rows of eucalyptus trees on the northern portion of the parcel east of Sandario. Abandoned concrete-lined irrigation ditches are present throughout the parcel.

#### **Suitability for Special-interest Species:**

Designations: This parcel was incorporated into CFPO Recovery Area 2 in the August 2002 Draft Recovery Plan. It is not within the formerly designated Critical Habitat for the CFPO. It is just north of the currently known geographic range of PPC. The parcel is bordered immediately to the north by Shaw "Class I Wildlife Habitat", in this case by a "Major extension of riparian habitat from protected areas". To the south and east, the parcel is bordered by "Class I - Mesquite Bosque" and "Class II" habitat. In the draft Sonoran Desert Conservation Plan, this entire parcel is indicated as Biological Core and Important Riparian Area.

Hypothetical Potential: The SDCP maps this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Cactus ferruginous pygmy-owl	23
Burrowing owl	1
Rufous-winged sparrow	1
Swainson's Hawk	1
Townsend's big-eared bat	2

It is possible that CFPOs might use the channelized wash or other portions of the parcel as a movement corridor.

Observations: The parcel was visited on April 10 and 19, 2002 by an SWCA senior scientist. There are no saguaros on the parcel but many of the mesquites along the channelized wash are greater than 6" diameter at 4.5 feet above ground level. Bell's vireos (County Potentially Vulnerable Species) were observed along the channelized wash. No other special-interest species were observed. Most of the vegetation consists of small mesquites and other shrubs typical of retired agricultural fields.

**Conclusion:** This parcel has potential mitigation value as a travel corridor for CFPO and as a segment of the Brawley/Black Wash system and linkage to Class I and Class II habitat to the north and south. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## **Parcel 24**

**Name:** Buckelew Farm

**Legal Description:** T15SR10E, all of Section 22; east half of Section 21; SE  $\frac{1}{4}$  of SW  $\frac{1}{4}$  of Section 21; approximately  $\frac{3}{4}$  of Section 28; and most of the NW  $\frac{1}{4}$  of Section 33.

**Purchase Date:** After 1980

**Total Acreage:** 1526

Undisturbed Acreage: 837

Disturbed Acreage: 689 (Irrigated Acreage: 590)

**Adjacent Land Ownership and Condition:** To the north is undeveloped State land. To the east, at the north end of the parcel, is undeveloped State land (Section 23). South of parcel 23, the neighboring lands to the east are private, with a mixture of low density residential development, undeveloped small parcels, and active agriculture. To the south is active agriculture. To the west is a mixture of low density residential development, undeveloped small parcels, and undeveloped State land.

**Edaphic Conditions:** The approximate elevation range is from 2,530 feet at the southwest end of the parcel to 2,450 feet at the northeast end of the parcel. The terrain is generally flat, although there are some gently rolling ridges in section 21 and 22. Soils are mostly sandy or silty loams. In the south half of section 21 and all of sections 28 and 33, the land has been farmed. The remainder of section 21 and all of section 22 has intact native soil, but it has been subject to grazing and flooding. Slope is generally less than 3%. A small portion of the center of Section 21 differs from the majority of the parcel, in being a steeper ridge with rocky soil and slope up to 20%. No open water is known to be present on the parcel, although an intermittent pond is present in Section 21. The parcel parallels Brawley Wash, which has been channelized at the south end of the parcel. Almost all of the parcel is within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production, Open Space River, Open Space Undisturbed

**Vegetation:**

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	143.15 Scrub Grassland	Mixed grasses and shrubs	347	23
Open Space River and Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	40	3
Open Space Undisturbed	154.11 Sonoran Desertscrub	Mesquite and creosote bush	445	29
Open Space River	224.52 Sonoran Riparian Deciduous Forest and Woodland	Mesquite	5	0.3
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	689	45

The Harris Riparian Vegetation map shows that the majority of riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub Xeroriparian, and a very small area in the northeast corner of section 22 as 224.5200 as Mesquite.

**General Condition:** Brawley Wash crosses the property, going south to north, and bisects the property into two portions. Portions of Brawley Wash are deeply eroded, and form steep banks more than 10 ft high, other portions are less eroded. Earth moving was done in some places along the wash to encourage water spreading and prevent erosion and flooding. A network of dirt roads crosses the retired agricultural land, and a dirt road crosses the northern portion of sections 21 and 22 running east-west. Much of the north half of this parcel is relatively undisturbed and appears to be valuable wildlife habitat. The xeroriparian vegetation appears to be in good condition. Most of the south half of this parcel is retired agricultural land with little vegetation.

### **Suitability for Special-interest Species:**

Designations: This parcel is entirely within CFPO Recovery Area 1, and the east ½ of Section 22 is within the Altar Valley Special Management Area. It is not within the formerly designated Critical Habitat for the CFPO. It is not within the currently mapped geographic range of PPC, and survey sites near this parcel had no PPC found on them. The parcel is bisected by Brawley Wash, which in this reach is considered "Class II Wildlife Habitat." Class II areas are important to wildlife because they support a diversity of species and large numbers of individuals. The parcel is outside the range covered by the Tucson Stormwater Management Study Natural Riparian Habitat Inventory. In the draft Sonoran Desert Conservation Plan, upland portions of the parcel are indicated as Biological Core or Recovery Management Areas (based on the CFPO Recovery Area designation, December 2000 version of the Draft Recovery Plan), and the xeroriparian areas are indicated as Important Riparian Areas.

Hypothetical Potential: The SDCP maps portions of this parcel as containing Priority Conservation Areas for the following species:

<u>Species</u>	<u>Priority</u>
Lowland leopard frog	24
Cactus ferruginous pygmy-owl	23
Rufous-winged Sparrow	1
Swainson's Hawk	1

It is possible that CFPOs might use the wash as a movement corridor, especially if the trees were protected from cutting, or if additional trees were planted and nurtured.

Observations: The parcel was visited on March 7, 2002 by a team of SWCA scientists. Soil conditions do not appear to be consistent with locations of Pima pineapple cactus known to us. There are no saguaros that might provide nesting habitat for CFPOs. Undeveloped portions of this parcel have sandy soil similar to that in which Tucson shovel-nosed snakes may be found. Xeroriparian vegetation provides conditions similar to those in which Abert's towhees and Bell's vireos have been found. Open formerly agricultural areas are similar to conditions under which burrowing owls have been found. The absence of water indicates that lowland leopard frog occurrence is highly unlikely. Conditions in Section 22 are similar to those in which rufous-winged sparrows and Swainson's hawks have been found.

**Conclusion:** This parcel has potential mitigation value for CFPO, particularly when viewed in the context of the other Avra Valley Parcels, but little potential for any PPC concentration. Of the species currently considered as Priority Vulnerable Species in the Sonoran Desert Conservation Plan, the parcel may provide potentially suitable habitat for the following species under current conditions: burrowing owl, Swainson's hawk, rufous-crowned sparrow, Abert's towhee, Bell's vireo, Tucson shovel-nosed snake, and Tumamoc globeberry. According to the Landowner Guidelines developed by the USFWS, some of the vegetation on this parcel fits the description of potential habitat for CFPO, and it would be appropriate to conduct surveys for the CFPO prior to any activities that would include clearing vegetation.

## Parcel 25

**Name:** Duval/Pennzoil Farm

**Legal Description:** T16S R10E, Portions of Sections 5, 6, 7, 8, 16, 18; T15S R10E portion of the south ¼ of Section 33.

**Purchase Date:** After 1980

**Total Acreage:** 1532

Undisturbed Acreage: 911

Disturbed Acreage: 621 (Irrigated Acreage: 549)

**Adjacent Land Ownership and Condition:** This parcel is bordered on all sides by a mixture of private, State, and Federal lands that are generally undisturbed grazing land, with several stock ponds, fences, and dirt roads. To the north is the Ajo Highway, across which is actively farmed private land. To the west is a parcel recently acquired by Pima County for conservation land.

**Edaphic Conditions:** Approximate elevation range is from 2,620 feet at the southwest end of the parcel to 2,530 feet at the northeast end. Soils are very sandy and fine-grained, eroding, with little organic horizon. Slope is generally less than 3%. There is no open, available water, although there are several livestock ponds on adjacent properties. The parcel parallels Brawley Wash, and is almost entirely within the boundary of the FEMA-designated 100-year flood event.

**Mapped Land Uses:** Agricultural Land Out of Production, Open Space River, Open Space Undisturbed

### Vegetation:

General	Association	Dominant species	Acres	% of parcel
Open Space Undisturbed	143.152 Scrub Grassland	Mixed grasses and shrubs, with mesquite abundant	174	11
Open Space River and Undisturbed	154.10 Sonoran Desertscrub Xeroriparian	Mesquite	250	16
Open Space Undisturbed	154.11 Sonoran Desertscrub	Mesquite and creosote bush	487	32
Agricultural Land Out Of Production	364.1 Sonoran Vacant or Fallow Land	Mesquite (as shrub), burroweed, and grasses	621	41

The Harris Riparian Vegetation map shows that the majority of riparian vegetation on this site is classified as 154.1000 Sonoran Desertscrub Xeroriparian.

**General Condition:** Brawley Wash crosses the property from south to north, and bisects the property into two portions. Portions of Brawley Wash are deeply eroded, and form steep banks more than 10 ft

Mesquites occur in medium to high densities along these washes. Elsewhere, in uplands, small mesquites occur in low to medium densities where they are associated with cholla and burroweed. Retired farmland at northwestern end of parcel has become revegetated with shrubby mesquite. Most of the parcel is occupied by Ryan Airfield infrastructure or has been impacted by earth moving and off-road vehicle traffic.

**Suitability for Special-interest Species:**

Designations: This parcel is entirely outside CFPO Recovery Areas and Special Management Areas. It is not within the formerly designated Critical Habitat for the CFPO. The parcel is entirely within the currently known range of PPC. Immediately north of the parcel is "Class I – Mesquite Bosque" and "Class II – Riparian" habitat associated with the Black Wash system. In the draft SDCP, most of the parcel is outside the reserve lands system. The northwest corner of the parcel (Hill Farm) is designated as Multiple Use or Recovery Management Area, and the mesquite lined wash in the eastern portion of the parcel is designated Important Riparian Area.

Hypothetical Potential: The western part of Hill Farm is indicated in the draft SDCP as within the Priority Conservation Area of the Burrowing owl, with a priority of 1. No other PCA's are indicated.

There is little potential for use by CFPO. Potential habitat for PPC is present in the undisturbed areas at the southwestern and eastern ends of this parcel.

Observations: The parcel was visited on April 19, 2002 by an SWCA senior scientist. Most of the land has been disturbed by various human activities, past and/or ongoing. There are no saguaros on the parcel and few mesquites greater than 6" diameter at 4.5 feet above ground level. The parcel appears to have little value for wildlife.

**Conclusion:** The undisturbed portions of this parcel should be surveyed for PPC, although substrates appear fair to marginal for this species. The parcel appears to provide little potential for CFPO. This parcel does not currently provide suitable habitat for any other Federal listed threatened or endangered species. No other species listed by Pima County as Priority Vulnerable Species or by the USFWS as Threatened or Endangered are known. The parcel shows no potential mitigation value.





